98th Congress
2d Session

JOINT COMMITTEE PRINT

S. PRT.
98-200

ECONOMIC CHANGE, PHYSICAL ILLNESS, MENTAL ILLNESS, AND SOCIAL DEVIANCE

A STUDY

PREPARED FOR THE USE OF THE

SUBCOMMITTEE ON ECONOMIC GOALS AND INTERGOVERNMENTAL POLICY

OF THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

JUNE 15, 1984

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE

29-272 O

WASHINGTON : 1984

J842-39

JOINT ECONOMIC COMMITTEE

(Created pursuant to sec. 5(a) of Public Law 304, 79th Congress)

SENATE	HOUSE OF REPRESENTATIVES
ROGER W. JEPSEN, Iowa, *Chairman*	LEE H. HAMILTON, Indiana, *Vice Chairman*
WILLIAM V. ROTH, JR., Delaware	GILLIS W. LONG, Louisiana
JAMES ABDNOR, South Dakota	PARREN J. MITCHELL, Maryland
STEVEN D. SYMMS, Idaho	AUGUSTUS F. HAWKINS, California
MACK MATTINGLY, Georgia	DAVID R. OBEY, Wisconsin
ALFONSE M. D'AMATO, New York	JAMES H. SCHEUER, New York
LLOYD BENTSEN, Texas	CHALMERS P. WYLIE, Ohio
WILLIAM PROXMIRE, Wisconsin	MARJORIE S. HOLT, Maryland
EDWARD M. KENNEDY, Massachusetts	DANIEL E. LUNGREN, California
PAUL S. SARBANES, Maryland	OLYMPIA J. SNOWE, Maine

DAN C. ROBERTS, *Executive Director*
JAMES K. GALBRAITH, *Deputy Director*

SUBCOMMITTEE ON ECONOMIC GOALS AND INTERGOVERNMENTAL POLICY

HOUSE OF REPRESENTATIVES	SENATE
LEE H. HAMILTON, Indiana, *Chairman*	LLOYD BENTSEN, Texas, *Vice Chairman*
AUGUSTUS F. HAWKINS, California	ROGER W. JEPSEN, Iowa
OLYMPIA J. SNOWE, Maine	ALFONSE M. D'AMATO, New York

LETTERS OF TRANSMITTAL

JUNE 11, 1984.

Hon. ROGER W. JEPSEN,
Chairman, Joint Economic Committee,
Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: Transmitted herewith for the use of the Joint Economic Committee is a study entitled "Economic Change, Physical Illness, Mental Illness, and Social Deviance."

The study was prepared for the Joint Economic Committee by Dr. Jeanne Prial Gordus and Sean McAlinden of the University of Michigan. It was coordinated by the Congressional Research Service under the direction of William Robinson, Senior Specialist in Social Welfare, and Ken Cahill, Specialist in Social Legislation at CRS.

The study reviews a wide range of research concerning relationships between changes in economic conditions and various indicators of social pathology. Beyond the direct economic consequences of changes in unemployment, for example, researchers have examined the impacts on such factors as physical and mental illness and crime. Over 50 studies in these areas have been surveyed from such disciplines as economics, sociology, psychology, and medicine.

From these studies, unemployment contributes strongly to such negative outcomes as higher suicide rates and mortality due to cardiovascular disease; higher rates of mental hospital admissions and imprisonments; hypertension resulting in subsequent illness; depression, anxiety, aggression, insomnia, and marital problems. Periods of high unemployment, with slow re-employment of jobless individuals, take their toll on not only the unemployed but their families and communities, as well as on those whose jobs are made more stressful by extra responsibilities or fears of lay off. The report compares different theories of how unemployment and economic deprivation lead to such results, to place in context the findings of a range of empirical and case studies.

The study also discusses how to assess the social or public costs of adverse economic changes. Typically, economists have viewed the major cost of recession in terms of lost output of goods and services that would have been produced by the unemployed. There are also quantifiable economic losses which the public bears in the form of reduced tax revenues and higher outlays for unemployment insurance, health, and social services. Less often quantified are the costs of higher illness rates and crime that fall upon individuals and society as a whole.

The study suggests that the full costs mount substantially if income losses due to higher mortality rates and institutionalization, as well as outlays for hospitalization and other medical treat-

ment, incarceration, and police deterrence are taken into account. With lower unemployment, some of the expenditures will not be necessary. Budget estimates of policies to reduce unemployment should make allowance for such savings.

This study was coordinated for the Committee by Mary Eccles of the professional staff. The views expressed are those of the authors and do not necessarily reflect the views of the Joint Economic Committee or any Members.

Sincerely,

LEE H. HAMILTON,
Chairman, Subcommittee on Economic Goals and Intergovernmental Policy.

JUNE 4, 1984.

Hon. LEE H. HAMILTON,
Chairman, Subcommittee on Economic Goals and Intergovernmental Policy, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: Transmitted herewith is a study entitled "Economic Change, Physical Illness, Mental Illness, and Social Deviance." The study was prepared for the Joint Economic Committee by Dr. Jeanne Prial Gordus and Sean McAlinden of the University of Michigan.

The Committee wishes to express its appreciation to the Congressional Research Service for coordinating this project, with special thanks to Ken Cahill, Specialist in Social Legislation, and William Robinson, Senior Specialist in Social Welfare. The views expressed in the study are those of the authors and do not necessarily reflect the views of the Joint Economic Committee or of any Members.

Sincerely,

JAMES K. GALBRAITH,
Deputy Director, Joint Economic Committee.

JANUARY 28, 1984.

Hon. LEE H. HAMILTON,
Chairman, Subcommittee on Economic Goals and Intergovernmental Policy, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: In response to your Committee's request, I am pleased to transmit a report entitled Economic Change, Physical Illness, Mental Illness, and Social Deviance, prepared by Dr. Jeanne Gordus, of the Institute of Labor and Industrial Relations of the University of Michigan, under contract with the Congressional Research Service. The report was co-authored by Mr. Sean McAlinden, also of the Institute. The report is a review of major research efforts directed at understanding the complex relationships between economic change and physical, mental and social well-being.

Activity in this area of research increased and received significant attention following the Joint Economic Committee's publication of Estimating the Social Costs of National Economic Policy:

Implications for Mental and Physical Health, and Criminal Aggression, by Dr. M. Harvey Brenner, in 1976. Because of this interest, and the national concern over the potential consequences of the current economic recession, the Committee requested that the Congressional Research Service assist in placing the 1976 report within a general framework of research in the field.

Dr. Gordus' report admirably organizes, synthesizes and makes accessible to the congressional audience a complex body of research spanning the disciplines of economics, sociology, health sciences, psychology and epidemiology. From about 250 research publications surveyed, Dr. Gordus finds substantial support for several important conclusions. Among these: That increases in the rate of unemployment are followed by increases in suicides, mental hospital admissions and imprisonment, especially in certain population groups; and that in time of extremely high unemployment, even those who remain employed exhibit increases in stress related problems such as hypertension, more frequent illnesses and insomnia. In general the report concludes that the "evidence which has been reviewed appears to support the contention that external economic forces are influential in altering health and behavior."

Nevertheless, this survey cautions that the answers to many questions in this area remain in doubt. While associations between economic change and social pathologies have been documented, knowledge of the direct causal factors needed for effective policy intervention remains limited. For example, Dr. Gordus points out that while the unemployment rate is clearly related to social pathologies it is not known which aspects of high unemployment—job loss, or anxiety over potential job loss, income loss or decreased self-esteem (among the many facets of unemployment)—are most directly linked to increased pathologies such as suicide or criminal activity.

Oversight on this contract was a joint effort of the Economics and Education and Public Welfare Divisions of the Congressional Research Service. Of course, the conclusions that the authors reach are their own and should not be taken to represent the views of the Congressional Research Service.

We hope you find this report helpful.

Sincerely,

GILBERT GUDE,
Director, Congressional Research Service,
Library of Congress.

ACKNOWLEDGMENTS

We wish to thank those authors whose research we reviewed here and to express our appreciation for their work. We are particularly grateful to those who provided us with offprints, preprints, and unpublished manuscripts, Professor Elliot Sclar, Professor Abraham Heller, and Dr. Louis A. Ferman as well as Craig King. Ken Cahill of the Congressional Research Service was a helpful project representative and assisted our efforts in many ways. Dr. Malcolm S. Cohen of the University of Michigan Institute of Labor and Industrial Relations gave us a much-needed critical review and Professor Stanley E. Seashore of the Institute of Social Research at the University provided counsel at a critical point. Professor M. Harvey Brenner provided consultation. We are especially grateful to Karen Yamakawa who typed numerous drafts, edited, compiled, and generally coordinated the completion of this review in a very short time.

CONTENTS

	Page
Letters of transmittal	III
Acknowledgments	VII
Executive summary	1
Purpose of the study	1
Research used in the review	2
Method and organization of the review	2
Findings	3
Conclusions	3
I. Overview	5
The problem of social selection versus social causation	5
Correlation and causation	6
Types of studies	8
Types of measures	9
Types of approaches	9
Types of conceptual frameworks: The important debates	10
The organization of this paper	13
II. Economic change, mental and physical illness and deviant behavior: A review of the theoretical basis of research	15
Economic change and illness	15
The sociological tradition	16
The psychological tradition	16
Life events and stress research	17
Social support, work and unemployment	18
Socioeconomic approaches	19
Economic change and social deviance (crime): Theory	23
The anomic model	24
The ecological model	24
The economic model	25
The radical model	26
Conclusions	27
III. Archival and epidemiological studies	28
Economic change and physical and mental illness: Archival evidence	28
Mental illness	29
Mortality	33
Suicide	35
Conclusions	37
Economic change and social deviance (crime): Archival evidence	38
Longitudinal or time series studies	39
Cross sectional studies	44
Conclusions	46
IV. The survey evidence on economic change, physical and mental illness and criminal behavior	48
Background	48
Methodological considerations	49
Three longitudinal plant closing studies	50
Longitudinal survey studies of unemployment	56
Research findings from the panel study on income dynamics	60
Economic change and social deviance (crime): Survey evidence	62
V. Case studies, clinical studies and oral histories	64
Background	64
Characteristics and findings of selected case studies	65
Case study theories and implications	69
Conclusions	70

Page

VI. Conclusions 72
Important findings and remaining questions 72
The importance of theory 75
A discussion of social costs 81
Concluding remarks 83
Appendix I 87
References 111

ECONOMIC CHANGE, PHYSICAL ILLNESS, MENTAL ILLNESS, AND SOCIAL DEVIANCE

By Jeanne Prial Gordus and Sean P. McAlinden [1]

EXECUTIVE SUMMARY

Purpose of the Study

The purpose of this study is to review the relevant research literature concerning the relationship between macroeconomic change, cycles in unemployment, and changes in the rate of physical and mental illness and crime. The traditional concepts surrounding the costs of unemployment have been centered upon problems associated with lost tax revenues, lost productivity, increased support expenditures, and declines in real income. More recently, attention has been directed to other costs, specifically the occurrence of these pathologies and, beyond that, the long-term economic impacts of those societal phenomena. Considerable debate around theoretical models, conceptual frameworks, problems of data collection, problems of analysis, and difficulties of interpretation has developed within the past decade.

The purpose of this review is to move a step closer to the resolution of this debate by assembling and reviewing the evidence presented in the research literature. In this sense, this review is a companion piece to a report prepared by Dr. M. Harvey Brenner, a major figure in this research community and a strong proponent of one approach. Another purpose of the review is to place new work into the context of a continuing stream of research and to identify those critical theoretical issues which remain unresolved. A final objective has been to determine where the weight of the evidence lies and what theory is, at this time, best supported by the available data. The fact that the evidence provides strong support for the argument that unemployment is closely associated with social pathologies shows that national economic policy has implications for life, death, crime, and illness or well-being. However, theoretical formulations about the way in which unemployment promotes illness and crime will, when they are validated, provide crucial guidance about the directions national policy should take to minimize these problems.

[1] Industrial Development Division, Institute of Science and Technology, the University of Michigan.

Research Used in the Review

There are three areas of social costs which have been consistently associated with large-scale economic change: mental health; physical health; and deviant behavior or crime.

From about 250 publications originally considered for close analysis we have selected 46 publications, representing more than 40 major research programs in these three areas. We have concentrated upon frequently cited studies and those generally considered as seminal by the research community. When possible, we have restricted our review to recent studies, although complete elucidation of one point or another has occasionally required inclusion of studies more than 20 years old. Choices were made to provide the fullest and clearest coverage of the points at issue.

Method and Organization of the Review

After the initial selection of studies was made, each was reviewed to extract specific types of information. These categories of information are:

The type of study.—This categorization depends in part upon the type of data used. Three types are common. Those drawn from official records are archival studies. Those depending upon questions asked of individuals in large scientifically sampled populations are the second type. The third kind is a variety of smaller studies, such as intensive interviews developed into "oral histories, social case studies, quasi-experiments, and psychological and physiological case studies.

Studies are further subdivided with respect to time. The first type are cross-sectional, measuring effects at one point in time while the second type are longitudinal studies measuring similar variables over different time periods.

The sample used in the study.—These range from random or nonrandom groups as small as 40 individuals to the entire American population.

The dependent variable(s).—This element is generally a pathology such as coronary disease, property crime, severe mental illness, or some combination of these. Indicators of disorders, hospitalization of the illness or institutionalization of the deviant are often used.

The independent variables.—This element contains at least two types of variables and those are considered in detail. One type is always an economic variable such as unemployment, or economic growth.

The theoretical base.—This is a summary of the approach and the theoretical tradition into which the hypotheses of each study can be fitted.

The conclusions.—The conclusions of the authors are presented.

Comments.—This category includes any pertinent information not included above as well as some evaluative material.

These categories are subdivided by type of pathology: physical or mental illness, or crime. Charts in which these categories are set out and information about the studies presented can be found in appendix I.

The organization of the review is designed to clarify conceptual and methodological problems, and studies are reviewed by type, i.e., archival, survey, or case study, further subdivided into cross-sectional or longitudinal categories. Before the studies are reviewed, the theoretical approaches are considered; after the studies are considered, a reappraisal of the major arguments is given.

Findings

The results of this analysis show that the following propositions have been validated through research and are generally accepted:

The suicide rate for prime age males, is positively and significantly correlated with cyclical unemployment.

Increases in the mortality rate for one group of prime age males (45–64 years) from cerebrovascular and cardiovascular disease, peak slightly more than a year after the unemployment rate peaks.

The unemployment rate is positively and significantly associated with mental hospital admissions and imprisonment at an appropriate lag.

Life events and stress associated with negative life events are predictors of subsequent illness.

Life events have been shown to be positively correlated with the unemployment rate.

Hypertension is exacerbated when job loss is anticipated.

Job loss is strongly associated with depression, anxiety, aggression, insomnia, loss of self-esteem, and marital problems.

Spouses of unemployed workers show psychiatric symptoms subsequent to job loss somewhat later than those reported by the unemployed partner.

In a situation where many people have been laid off, increased job responsibilities for those who remain employed are positively associated with gastrointestinal problems, increased hypertension, more frequent illness, increased anxiety and insomnia.

Conclusions

The evidence which has been reviewed appears to support the contention that external economic forces are influential in altering health and behavior. We believe, based on the data presented, that rises in unemployment act to reduce social support, self-esteem, and resistance to disease for the unemployed, their families, members of the communities and, often, those remaining in a highly stressed workplace. We favor strongly those arguments that identify economic deprivation and some psychological and physiological responses as strong aggravators of the stress imposed by unemployment and economic change. Moreover, as the unemployment rate rises higher, those laid off are increasingly those of higher socioeconomic status and have more to lose. Despite higher initial levels of resources these individuals are very likely to suffer from economic adversity during prolonged unemployment. This economic deprivation may continue as the newly unemployed lose occupational status by skidding down through the labor market. The evidence we have analyzed overwhelmingly supports the contention

that the unemployment rate is the most powerful external variable explaining the difference in findings among studies. Those studies undertaken at times when unemployment ranged around 4 percent and where respondents became reemployed within 15–20 weeks, show few negative outcomes. In contrast, research undertaken when rates of unemployment were high, and when reemployment took 10 months or more, shows more negative results for individuals. In conclusion, the evidence for a social causation approach to the connections between macroeconomic change and social pathologies is particularly strong in periods of high unemployment. The data support the argument that these high rates of unemployment provoke very serious consequences in terms of mortality, illness, and social deviance.

I. OVERVIEW

The intuition that the condition of the economy and economic changes influence personal and collective health and behavior is probably many centuries old. In 1897, Emile Durkheim demonstrated that large-scale economic change and suicide rates were related and began a major research tradition which has recently provoked public concern and discussion. For many years after Durkheim, occasional research efforts provided information and enlightenment. But the research area was difficult because it encompassed economics, sociology, medicine, psychology, public health, and law. It was theoretically fragmented as well since no common body of finding or theoretical approach has been developed.

Since the appearance of the work of M. Harvey Brenner (1973, 1976, 1979) there has been renewed interest in this research area. Increased attention has been directed toward earlier research, and new studies have been completed. A number of debates over important theoretical and empirical issues have arisen and required discussion. This review is intended to draw these findings together to explore the commonalities among them and to underline the most important results. It will highlight recent theories, methods, and debates so as to provide a context in which Professor Brenner's newest findings can be understood. The research area is complicated and this review will attempt to describe clearly and simply—though not, it is hoped simplistically—these complexities. It will outline what is known, how it is known, and what still requires investigation.

The Problem of Social Selection Versus Social Causation

Readers of this review will soon notice the persistent use of the terms, "social selection" and "social causation." No simple terms are available to describe these two theoretical perspectives, but since these fundamentally opposing views influence so much research in the behavioral sciences, it is important to discuss them. In fact, the degree to which a researcher adheres to one of the views rather than the other influences—not just theory, method, or research strategy—but the basic conceptualization of what is and what is not the question.

The "social selection" view places great emphasis on personal characteristics in a special way. For researchers who adopt this perspective, health or illness, a high or low level of social development, or a high or low level of social competence, are the independent variables. These characteristics are not, for those taking a social selection position, an outcome or result of the life process. Instead, they are perhaps the most powerful forces shaping life patterns. To understand this formulation, it is useful to imagine a group of individuals moving through time. Some of the individuals

in the group, propelled by good health, social competence, and/or high level of social development, would separate from the group and move rapidly toward desirable and stable employment which would, in turn, reinforce their positive physical and social adaptations. Others, hampered by poor health, low social competence, and/or low levels of social development, would drop back. They would find productive labor force attachment difficult, and the reverses suffered would further exacerbate poor health and poor social development. Often, this combination of negative attributes reinforced by negative experiences would cause such individuals to drop very far back or to drop out of the group completely.

The "social causation" perspective emphasizes environmental forces rather than personal attributes. For researchers adopting a "social causation" perspective—including many whose work is reviewed here—employment, income, occupational status, work transitions, and social status are independent variables which are considered to have important effects on health and behavior. To understand the social causation view, one might imagine a group of individuals moving through time as large-scale environmental forces (in our review, economic forces specifically) impinge upon the group, causing some to change position, some to drop back, and others to drop out. The impact of these economic forces will alter health and behavior for some individuals. Health and behavior are the outcomes, or dependent variables. In this view, economic and social forces have considerable power to shape life patterns and to alter social adaptation.

One researcher has remarked that more than 15 comprehensive literature reviews and analyses were undertaken between 1940 and 1975 to sort out these two approaches, and resolution of the debate seems no closer after 35 years of disputation and research (Berg 1979). The studies we review are sufficiently sophisticated to embrace portions of both positions. For example, genetic predisposition (an element of the social selection model) to a disease such as hypertension interacts with the stress produced by economic change (an element of the social causation position) to place predisposed individuals at greater risk for illness during unemployment. These two perspectives have enduring intellectual importance. Since they are so critical and so seldom identified explicitly, we will often note when a novel approach or a new theoretical formulation is drawn from the social selection model or the social causation model.

Correlation and Causation

Discussion of this research area requires us to make constant reference to the separate, yet related, statistical concepts of correlation and causation. Correlation, the demonstration that several variables or phenomena change together or that a relationship can be shown in their movement, is the most common method used by researchers in our subject literature. Yet correlation, of course, does not imply the direction or even the existence of causality between the variables. For causation, it is not enough to demonstrate a relationship between movements or occurrences of phenomena,

but it must be shown that the occurrence of one phenomenon contributes strongly to the probability of the occurrence of the other.

As defined by Heise (1975), "A causal relationship is one which the occurrence of the first event is a sufficient condition for the occurrence of the later event." Heise also states that this first event must set into motion an operator or process that, perhaps only under special conditions, generates the later event. For example, the occurrence of macroeconomic change may bring about great personal economic change for many individuals, who as a result, will suffer from increased psychosocial stress, lowering their resistance to physical and mental illness, which will finally result in an increase in the rate of social pathology. This whole causal relationship may only operate during periods of severe economic conditions.

If it can be shown that occurrence of a first event brings into play an operator or process that has the capacity to cause the later event, the case for a causal relationship between the two events, in a specific direction over a certain time period, is greatly strengthened. However, if an operator or process is not revealed, neither the direction nor the existence of causality between related occurrences of events can be said to be determined.

If a causal relationship remains unproven, then the seeming relation between the occurrences of two events may be spurious. Some unknown third event or factor may be actually responsible for the occurrences of the first two events, giving them the appearance of being causally related. If the causal process remains unclear, the direction of causality between the occurrences of two events will remain undetermined. It is this latter problem that is responsible for much of the debate in the literature we are about to review. The question of whether economic change induces social pathology, at the individual level, or that social pathology brings about economic change, finds its source in the lack of a clear specified process linking related occurrences of the two events.

We should also first make clear the various terms and qualifying phrases we will use in our discussion of study correlations. At times, a correlation may be referred to as an "association," a "relation," or a "connection." There are a number of different types of correlations.

A direct or positive correlation between occurrences of events or levels of variables refers to a situation where, if the probability of occurrence of one event or the level of one variable measured in the correlation is seen to increase, the probability of occurrence or level of the other event or variable is seen to increase also. If the probability of occurrence of one event or level of one variable measured in the correlation is seen to decrease, the probability of occurrence or level of the other event or variable is seen to decrease also. In other words, the probabilities or levels of the two events or variables vary in the same direction. For example, unemployment has been positively or directly correlated with mental hospital admissions. As the rate of unemployment has increased, mental hospital admissions have been seen to increase also.

An inverse or negative correlation between occurrences of events or levels of variables refers to a situation where if the probability of occurrence of one event or the level of one variable measured in

the correlation is seen to increase, the probability of occurrence or level of the other event or variable is seen to decrease. In other words, the probabilities or levels of the correlated events or variables vary in opposite directions. For example, socioeconomic status has been inversely or negatively correlated with the rate of mental illness. The rate of mental illness has been found to be higher for lower socioeconomic status groups than for high socioeconomic groups.

Finally, we will refer to some correlations as significant. This usually means that some adequate level of statistical confidence can be held about the found relation between two events or variables measured by the correlation.

Types of Studies

We will discusss three types of studies. These types will be based on the kinds of data researchers use—archival, survey, and case study data. Archival studies rely on official sources such as prison or hospital records. Surveys depend upon acquiring information by asking questions of scientifically selected groups of individuals. Case studies usually involve data on small nonrandom groups of people obtained by intensive interviewing about life events, symptoms, or behavior. Each of these broad types can be further categorized by the relationship of the study data to time. Professor Brenner's studies, for example, deal with the analyses of archival time series data. His 1973 study of economic change and mental hospitalization in New York State between 1914 and 1967 showed patterns of correlations between a strong indicator of mental illness (mental hospital admissions) and an indicator of overall economic change (a state manufacturing employment index). Other archival studies are cross-sectional, especially in the literature of economics and crime. Cross-sectional studies are like snapshots of large groups of people at one point in time. These studies often demonstrate the relation between two variables, such as low income population tracts and high crime rates at that one point in time.

A second source of empirical data in the literature is the survey, both longitudinal (measured over time) and cross-sectional (at one point in time). Examples of longitudinal surveys include such studies as the repeated measurements of the effects of a plant closing over two years on 100 displaced workers, or the follow-up interviews and record-tracking of released North Carolina prisoners.

The third major source of study data is the nonrandom case study. Like survey results, this source of data has a possible theoretical advantage over archival data in that the economic history of the subject can be directly linked to the occurrence or nonoccurrence of a subsequent pathology.

Recently studies have tended to utilize multiple sources of data in their empirical approach. Complex attempts have been made to match archival evidence with survey evidence, and to supplement this mix with case studies or interviews. Social scientists have resorted to these multiple approaches to investigate connections between economic change and social and psychological phenomena because experiments cannot be performed that control for all or even most of the major variables. Occasionally in the literature, a

revealing quasi-experiment will turn up, a study where one part of the sample was exposed to a treatment or changed circumstances and was matched against a control group and the differences measured. However, the programmatic literature has rarely provided studies that investigate the causal connection between economic conditions and the various pathologies of concern in this report.

Types of Measures

The studies on economic change and physical, social, and psychological pathologies measure many variables falling into three general categories. The first category contains the pathologies themselves, the outcomes or the dependent variables. In mental health studies, mental hospitalization is often measured (Brenner 1973) and the suicide rate has frequently been associated with economic change (Durkheim 1897). Archival studies dealing with economic change and physical health tend to utilize mortality rates for various stress-related illnesses, while studies on economic change and crime almost always make use of the FBI-collected Uniform Crime Reports data on indexed crimes. Such archival information can be easily obtained at the national, state, or Standard Metropolitan Statistical Area (SMSA) aggregate level, but it presents difficulties which will be discussed later.

The second category of variables is the measures of economic change, or the prime explanatory variables. The type of economic change variable utilized differs widely across the studies. Although the unemployment and employment rates or levels are the most widely used measures in archival studies, other variables such as business indices, stock price indices, inflation rates, labor force participation rates, measures of income inequality, and national and local income levels have been used. Survey studies and case studies generally rely on individual job loss or unemployment, although much of the early literature used class status change as an economic change variable.

The third category of variables usually measured is the so-called intervening variables or other explanatory variables. Usually such background variables as age, race, sex and occupation are either added to the statistical model or used to subdivide the sample to calculate separate results. However, depending upon the disciplinary approach utilized, important theoretical intervening variables are sometimes introduced. In the mental health studies, such measures as mental hospital capacity or evidence of pre-existing symptoms have been used. In the economics and crime literature, levels or rates of legal deterrence, proportions of broken homes in the community, and the perceived return to criminal activity are often important intervening variables.

Types of Approaches

Basically, researchers can choose to measure the relationship between two variables at one point in time (cross-section studies) at either the individual level or the aggregate level. An individual cross-sectional study would, for example, examine the relationship between the income and the health status of an individual. An aggregate cross-section study would measure the state of the general

economy and the health of the whole population. These aggregate studies are valuable because they can demonstrate the national severity and, perhaps, even the costs of a specific problem, but measures over time are necessary to assess the impact of any changes.

Longitudinal measures, studies in which changes over time are important, can be either aggregate or individual also. Professor Brenner's work is an example of aggregate longitudinal research where economic changes over time are related to a variety of social pathologies. Individual longitudinal studies, such as several sets of interviews with employees laid off after a plant closing, may fail to capture the large picture as Professor Brenner's work does. The advantage in them is that important individual changes over time can be clearly seen.

Many of the points to be debated below are related to the problems encountered in attempting to link aggregate level findings with individual level findings and vice versa. Other major issues will focus on whether it is a status, such as poverty, which is important or whether it is a change, such as a recession, which is crucial to health status or behavioral disorder.

Types of Conceptual Frameworks: The Important Debates

One major conceptual issue in this area of research concerns the question of whether individual or collective disorders are related to positive or negative economic change, or simply to economic change in and of itself, desirable or undesirable. One analysis links increased mortality with economic growth, contending that the largest increases in mortality occur when the unemployment rate is declining. That study also attempts to demonstrate that work pressure, not involuntary idleness, is associated with many pathologies. Brenner, one of the strongest proponents of the undesirable economic change thesis, in a 1973 study has shown that certain demographic groups notably those under 15 and over 70 years of age, show negative outcomes, such as increased mental hospital admissions, connected to positive economic change. And despite pre-existing theories of the relationship of poverty to crime, many theorists during recent decades have been confronted with the difficult task of reconciling soaring crime rates and strong economic growth. The idea that change itself, positive or negative, has a negative impact on individuals can be traced to Durkheim (1897). Recently this has been reemphasized in the literature dealing with stress, life events and life cycle events (Holmes and Rahe 1967).

If there is disagreement about the direction of economic change associated with pathologies, there is also deep and longstanding disagreement about "risk" populations. Aggregate analyses have contributed little clarification to this dispute. Despite a rather substantial series of mostly cross-sectional studies, it cannot be stated with any certainty that the correlation of mental illness with poverty or reduced economic circumstances is any more than a strong association. Whether poverty causes pathologies or pathologies cause poverty has yet to be demonstrated in such a way as to achieve agreement in the research community for either position.

Just as cross-sectional studies focus upon connections between static states but exclude movement over time, longitudinal studies

emphasize externally imposed change. From these two types of studies, defined by their different measures and different methods of collecting data, two general approaches to economic change and pathology can be identified in the literature. Cross-sectional studies seem to have led to a hypothetical formulation which emphasizes individuals' socioeconomic status and related adaptive capabilities. It finds that those with lower status and fewer adaptive capabilities are disproportionately found among the economically disadvantaged and among groups with behavioral and physical disorders. Such individuals are "selected" for negative personal and economic outcomes. In fact, in the recent literature on economics and crime, dominated by the "Chicago School" economics of Ehrlich and Becker and relying almost exclusively on archival cross-sectional data, individuals are seen to "select" themselves rationally for deviant criminal behavior on the basis of their opportunity status.

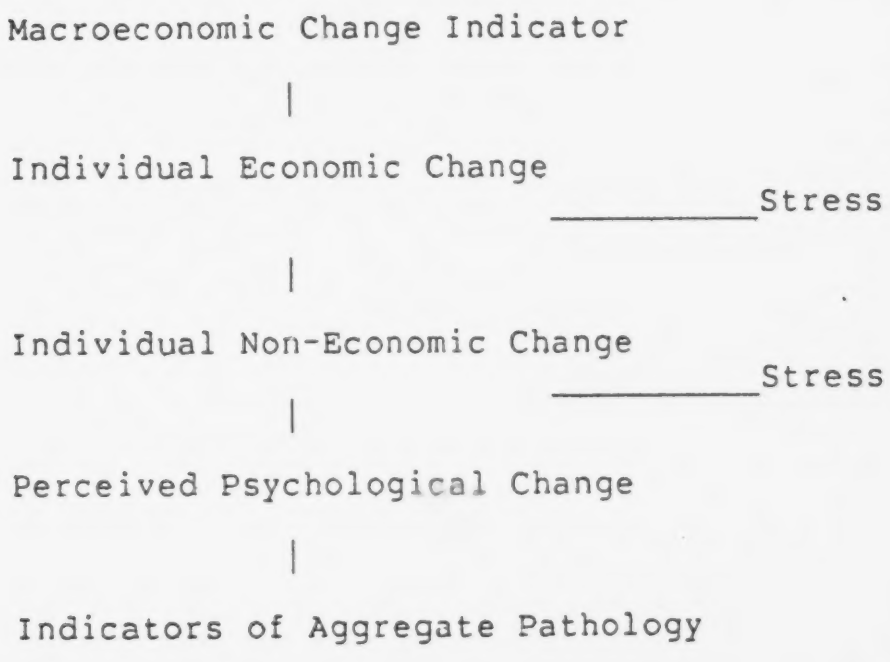
Longitudinal studies, emphasizing environmental change, have focused on economic change as the driving force while status remains important though secondary. This approach confers one type of unity upon these studies, a common concern with the provocation of illness or behavioral disorders and thus an emphasis on "social causation." This unity breaks down, as noted earlier, over the direction of economic change. One study finds that prosperity increases mortality, while another finds that rising unemployment is correlated with mental hospitalization and other pathologies. Still another finds that economic change of any type is correlated with rises in the suicide rate.

More recent debates have addressed the "uncovering" or "provocation" of behavior disorder. In its simplest form, the "uncovering" argument maintains that while, in the aggregate, economic downturns are correlative with increases in hospitalization, those directly affected by the economic downturn, the unemployed, are not the individuals who are hospitalized. In other words, economic downturns provide a set of social conditions which make an individual who has remained untreated more likely to be treated. Society in general, and small social groups in particular, become, under economic pressure, less tolerant of deviance than was the case in better economic times. The intolerance concept is also associated with sociological approaches which see both society in the aggregate and smaller social groups perturbed by economic change. This disturbance influences customary patterns and reduces acceptance of responsibility for dependents, especially under economic pressure.

There is an even more specific version of the "uncovering" argument. This model suggests that social systems, such as the family, may sometimes have too few workers to meet their functional requirements. These social systems may tolerate deviance, since even deviant individuals are needed to perform required tasks during periods of labor market shortages. But in situations where there is a surplus of individuals needed for required tasks, this argument would suggest that deviant individuals would be subtracted from this surplus through institutionalization. Since their services are no longer needed, the potentially heavy emotional and economic costs of their upkeep might be felt as more onerous in hard times, or periods of surplus in the labor market. A similar "warehousing"

of the deviant argument has appeared in the economics and crime literature. This type of argument can provide a plausible explanation for varying rates of institutionalization found among different demographic groups. Fuller discussion of these points will be provided in a later section.

Provocation arguments, on the other hand, would posit a more direct relationship between macroeconomic change and individual problems. Research on stress and adaptation has lent to this formulation a theoretical perspective which is rich though still incompletely explicated in any study. Stress has become central to an argument which might be outlined as follows:



With stress points inserted in the schema between individual noneconomic change and individual psychological change, the question of why some fare better than others arises even more forcefully. A significant body of research within the unemployment tradition identifies economic deprivation or perceived economic deprivation as powerful exacerbators of the process which moves toward symptoms of pathology and behavioral disorder. Yet another field of research focuses on social support. This concept often includes tangible and intangible goods ranging from instrumental assistance through moral support and understanding. Social support may offer important protection against problems associated with economic change. But, as our analysis of several studies will show, that rather persuasive scheme provides both conceptual and analytical problems over and above the differing definition of social support which are used. For example, does social support not wane during extended periods of unemployment? If it does, has anything new really been stated or is the erosion of social support not just

one aspect of the social disintegration which Durkheim associated with economic change? These debates will be discussed more fully in later sections.

The subject matter of this paper will be change, economic change and its correlation with changes in physical and mental illness and social disorder. Such changes and continuities in our views of these problems will be the theme. These changes, as the review will show, are often related to research approaches, the types of measures used, the methods of collecting information, the conceptual and theoretical frameworks employed, and the statistical approaches and analytical strategies utilized. By emphasizing these important shifts between, for example, the aggregate and individual levels of analysis, we plan to expose some underlying unity among these findings and to suggest how more congruity might be achieved.

The Organization of This Paper

The task of this review is to investigate the different methods, findings, and conceptual frameworks and to synthesize the results. We have chosen to proceed by categorizing types of studies. The advantages of this approach are that similar types of findings about similar pathologies—crime, illness, or behavioral disorder—can be described as having been assessed by the same methods. Such a comparative analysis of results encourages reflection on more than just the results themselves. It focuses upon the validity of the results. In practice, readers will find that specific pathologies or outcomes tend to cluster in one type of study more than others. For example, crime studies are almost all clustered in the archival section, with one survey and no case studies. Surveys are concerned mostly with physical and mental illness as outcomes, and symptoms of specific types are identified. Archival studies concerned with mental health emphasize serious problems resulting in hospitalization while case studies and surveys explore less serious problems such as depression and insomnia. This clustering provides added emphasis since it illustrates vividly that some types of evidence show best the extensiveness of serious problems while others can reveal the slow development of less threatening but still costly illness. Finally, this approach permits us to feature the widest array of studies emphasizing all the outcomes which have been measured—a good way to inform readers about the richness and complexity of this research area.

First, we will discuss the major theoretical approaches used in the study of the economy and pathologies. Then we will discuss archival and epidemiological studies on the national level, comparing and contrasting the work of M. Harvey Brenner with other studies in physical illness, mental illness, and crime. We will then move to the regional studies, featuring Professor Brenner's work again, this time in association with the research of Catalano and Dooley, Sclar, and others.

Surveys of two major types will be reviewed next with summaries of findings of both cross-sectional studies and longitudinal studies of different types. This is a rich and varied group of studies. We will review at some length a series of clinical studies, case his-

tories, and evaluations of treatment, not because such studies are linked in any specific way to large-scale aggregate analyses but because, by means of a variety of techniques, the process through which individuals pass during an economic downturn and the experience of unemployment are exposed. This type of research effort often results in new hypotheses and models. Such hypotheses are often drawn from other fields of research and "fitted" to an oral history.

After review of three major types of research, we will summarize and synthesize the findings with comments on measures, approaches, analysis and statistical strategies, and theoretical considerations. In the subsequent section, what is known will be set in the context of remaining problems and debates, and some attention will be given to the issue of costs of pathologies.

In conclusion, we will restate the questions raised, suggest some new theoretical approaches, comment on the problems inherent in this research area and suggest strategies for minimizing some of these difficulties.

II. ECONOMIC CHANGE, MENTAL AND PHYSICAL ILLNESS AND DEVIANT BEHAVIOR: A REVIEW OF THE THEORETICAL BASIS OF RESEARCH

Economic Change and Illness

In this chapter, we will review the most important and powerful theories which have been used to explain observations. First, we will discuss the theoretical traditions in research on economic change and illness, both mental and physical. Then we will focus on the theoretical foundations which are important in research on economic change and crime. It may seem that there are many theories in both areas, but in the economic change-illness research area, many apparently new theories are really variations on older approaches. New research may not result in a new theory, but it may focus on one variable or set of variables rather than another. It might also concentrate on one level of analysis such as the aggregate in preference to the individual. In the economic change and illness research area, we can identify three important research traditions, the sociological, the psychological and a third variant which can be categorized as socioeconomic.

Several major points will be emphasized in this theoretical review. The first point is that concepts and variables first associated with one major approach will often be used later in another theoretical approach. The sociological tradition has emphasized the potential for personal disorientation and distress present when society and social institutions undergo change. The psychological tradition focuses upon individual outcomes and attempts to establish connections between health and some elements of social institutions. However, in the search for mechanisms which can provide plausible explanations for the relationships between social change and individual outcomes, a variety of important psychophysiological and psychosocial research efforts have been explored. Three of these research areas, life events, stress research, and social support studies, have been used by research in both the psychological and sociological traditions. While this tendency to adopt and adapt provides added explanatory power, it also makes simple categorization of these theories difficult. Even greater complexity is present in the work of those researchers who add yet another dimension to their theoretical approach and their data collection, namely, some emphasis on one aspect or another of the labor market. The recent history of research in this area is marked by a tendency toward the development of a unified theory which would join the most powerful elements of different approaches together, a process which has promoted a substantial amount of research and debate.

The Sociological Tradition

The sociological theoretical tradition is the oldest and most persistent and began with the anomic explanation advanced by Durkheim (1897) in his pioneering study of economic change and suicide. The concept of anomie as expressed by Durkheim (1897) can be crudely explained as that individual condition of "normlessness" or unregulated appetites and passions that occurs when society is no longer able or willing to restrain or limit the naturally unlimited aspirations of individuals. Durkheim thought that periods of social disorganization, when society loses cohesion and its power or desire to enforce normality or value systems, were periods of increased anomic behavior in individuals, leading to increases in the crime and suicide rates. Durkheim especially emphasized periods of strong economic growth where there occurs "an abrupt growth of power and wealth" as the source of destabilizing conditions conducive to fostering anomie. Durkheim contended that such periods of sharply rising business conditions would raise the material and status expectations of individuals without limit, and perhaps pass the realistic and legal means of satisfying these aspirations.

An important version of Durkheim's anomie theory was developed by Robert K. Merton (1953). Merton disagreed with Durkeim about the source of the unlimited aspirations Durkheim found naturally inherent in individuals. Merton located the source of these material desires in society itself and suggested that they are culturally transmitted to the individual as ego-linked goals or values (i.e. the strong and persistent "Success Theme in American Culture"). Although society also stresses that material success should be achieved through institutionalized means or the social structure, many individuals, especially those from reduced circumstances, find it impossible to restrict themselves to legitimate methods to achieve the goal of wealth maximization. Merton identifies five "adaptations" to the dilemma of unlimited socially set goals and limited socially set institutionalized means. The adaptation identified by Merton as "retreatism" means escape from pressures through substance abuse, isolation, and delusion. That maladaptation would be at the root of mental illness and suicide. This anomic tradition of research has remained powerful in many crucial respects although the terminology is changed depending upon the discipline used. From the Durkheimian alienation from society associated with suicide, further research has linked status incongruity with heart diseases and role ambiguity with mental illness and depression. These new developments are elaborations upon the societal disorganization/personal disorganization position. At present, Brenner works within this tradition.

The Psychological Tradition

Another longstanding and powerful tradition of economic forces and illness research is the approach emphasizing socioeconomic status. The most consistent result of all these studies attempting to assess the "true prevalence" of psychological disorder in community populations is the demonstration of an inverse relationship between social class and the rate of psychological disorder. This approach cannot reveal much about the development of disease. This

socioeconomic correlation is extremely powerful across all possible negative outcomes of economic forces, but the question of social causation versus social selection remains unanswered. In correlations with socioeconomic status, a social causation argument would highlight the role of environmental pressures connected with low social status in causing illness. A social selection argument would implicate previously existing pathology as a factor leading to low socioeconomic status.

It should be noted that a very substantial literature dwells on both physical illness and psychological disorder. Schizophrenia and personality disorder are inversely related to socioeconomic status. Mortality, hypertension and some cancers are also inversely related to socioeconomic status.

The past decade or so has witnessed general agreement about two fundamental points. First, illness of all kinds is inversely related to socioeconomic status and second, economic change is implicated heavily in a variety of negative personal outcomes. Further advances need to be made before the etiology or development of disease and aberrant behavior can be understood and more elaborate hypotheses devised.

Life Events and Stress Research

The conjunction of two other research traditions, the life events tradition and the stress model, led to new theories about economic forces and individual mental and physical illness. The life events research tradition began nearly 30 years ago and virtually every known disease has been either weakly or strongly linked to some type of life event. The life events are nearly always negative—bereavement, separation, or divorce. The lists of diseases include tuberculosis, anemia, multiple sclerosis, ulcerative colitis, asthma, cancer, leukemia, lymphoma, and congestive heart failure among others. A major debate about coronary disease and psychological variables has recently been resolved in favor of a link between negative life events and coronary disease.

Recently, the stress model has become very important in work connecting unemployment and negative health outcomes. It provides a connection between the event and the individual's maladaptation to the event. The idea of stress originated in physical science, moved with great success to the biological sciences, and now appears very regularly in literature associating life events and subsequent illness. Because it is associated with specific events and the difficulty experienced in adjusting to these events, it focuses upon unemployment-related negative outcomes for unemployed individuals and families and, to a lesser degree, on others in the community. The appearance of the stress model has usually indicated that the researcher was attempting to make very direct connections between the economy and the personal outcome in question.

The association of illness with psychological stress has become so important in a number of areas that its advantages and disadvantages require some comment. The Social Readjustment Rating Scale (SRRS), developed by Holmes and Rahe, contains 42 life events which are mostly negative and range from the highly specific (death of a spouse) to the very general and ambiguous (change in

recreation). These events are given various ratings and the ratings of all life events happening to a person over a specific period of time are added up. This total rating is used to predict the likelihood of illness for the individuals in the near future with high scores, meaning higher probability of illness. In retrospective studies, individuals already afflicted are studied to ascertain the total scores they had accrued over a period of time. A prospective study is clearly better, although such studies are time-consuming and difficult. However, even with the problems of ambiguity and other difficulties of interpretation, two recent reviews have shown that the SRRS can be used to predict illness. However, most of the predictions are confirmed only at a low or marginal level of statistical significance. Despite the problems involved in using the stress model and the SRRS measure, large populations can be studied in this way, and a weak effect of stress on disease can be expected. This crude scale is particularly useful in cases of unemployment. Life events which often occur because of unemployment appear in the scale (e.g., large debts, change of daily habits), as do events which often occur subsequent to termination, and the accumulated ratings can be very high. This process is called "the acceleration of stress" by Brenner.

The recent high level of interest in stress and the power of this concept to explain the correlation between repeated adaptations to life events and the onset of illness tends to conceal the fact that little is known about how stress actually provokes illness. A clear exposition of the psychophysiology of stress was developed by Dr. George Curtis (1979). Stress is actually a response to a threatening situation and involves the acceleration of catabolism. In other words, an organism, faced with threat, responds in a stress mode. This involves tissue breakdown and the depletion of energy stores and makes organisms more vulnerable to disease.

Social Support, Work and Unemployment

It must by understood that stress occurs in situations other than job loss. It was recently shown that high levels of stress and low levels of social support in the workplace are predictive of illness. This work follows a significant tradition associating physical and mental illness with stress at work. To a great degree, these findings complicate at least one aspect of the unemployment-related stress argument since the absence of work might actually remove a significant stressor.

It is in this context that social support must be understood. In unemployment research, social support has been shown to moderate a wide range of work-role deprivations and mental health outcomes. Social support, even when it refers to instrumental assistance and emotional support given by spouse, family members, other kin, coworkers, and neighbors, is difficult to conceptualize. Indeed, one recent study actually provides respondents with pictures on concentric circles as an aid. The inner circle is composed of intimates such as spouse, while close friends and some kin comprise the second circle. The third or outer circle is groups of acquaintances. The relative positions of these individuals vis-a-vis the respondent are functionally described, (e.g., in whom could one con-

fide, or from whom could one borrow a car) to assess proper placement within the network of social support.

Generally within social support the three variables considered most important are affect, affirmation, and assistance. Affect refers primarily to emotional interactions, or the emotional component of social interactions. Affirmation is a more cognitive concept and includes the feedback an individual receives about how appropriate the individual's actions or responses to a situation may be. In different ways, both affect and affirmation are important for continuing self-esteem. Assistance, on the other hand, is more tangible and refers to a wide range of helping behaviors. In come cases, resource support, meaning goods and services, are also included within the assistance element of social support.

The social support hypothesis focuses upon the individual. It both specifies and categorizes by function those from whom an individual can expect to receive social support and to whom a person would expect to provide social support. While it is a functional concept, describing what actually does occur or what is expected to occur, it also emphasizes informal relationships. Where a social support hypothesis might emphasize the first and most intimate group, where that group might very well be the immediate family of the individual, this formal designation does not often appear as such. The older sociological tradition might make the same point by noting that the family is an important mediating institution between society and the individuals. It may be that, in several important respects, social support and supportive social environment are very much the same. It may also be that fragmentation of social environment implicated in later anomic states may be similar to a low level of social support and/or a perceived level of social support.

It is important to note that several different perspectives and approaches to social support occur in the unemployment research tradition. The research identifying the power of social support to buffer negative life events must be set alongside the approach in which unemployment itself is considered to have a reductive effect upon the social support network available. For example, the loss of financial resources needed for reciprocity and social interaction limits utilization of the social support networks. Therefore just as these supports are most needed, access to them is most restricted. If it is true that social support is not distributed equitably across society, it may be that persons in lower socioeconomic groups and in most need are less likely to have strong and extensive support systems. Sidney Cobb, Stanislav Kasl and Susan Gore have worked extensively in the social support variations of the psychological tradition.

Socioeconomic Approaches

While it is probably safe to assign the work of M. Harvey Brenner to the sociological tradition, and the research of Sidney Cobb and Stanislav Kasl to the psychological approach, other research is more difficult to characterize. However, one common element does serve to categorize the otherwise disparate work of Louis A. Ferman, Eliot Sclar and the team of Ralph Catalano and David

Dooley. In view of the importance of their findings and the debates which surround these issues, a brief note about the ways in which their models use some economic formulations will be useful.

As we will describe later, the work of Louis A. Ferman has stood firmly in the sociological tradition for more than 25 years. However, Ferman's view of the personal outcomes associated with unemployment is firmly tied to financial resources. Despite this recent emphasis upon social support and its role in mediating the distress of life events, Ferman emphasizes anomie and alienation. The route to anomie is a path downward through the labor market according to Ferman. Disorientation associated with downward mobility is a standard sociological approach, but emphasis on the lack of resources. a departure from Durkheim, is most crucial in this formulation. Not only does the lack of money cause personal and family hardship and erode self-esteem, it erects barriers between the individuals who have real and/or perceived economic deprivation and those associates from whom social support might be forthcoming. Unable to reciprocate or share in social interactions, individuals whose patterns include prolonged unemployment or episodic reemployment punctuated by more bouts of unemployment most often suffer a decline in social support directly related to their resource insufficiency. While economic factors surface here as intervening variables, they are crucial variables with great potential for exacerbating the effects of unemployment.

The Sclar formulation involves economic change at several points. Those changes which result in higher levels of unemployment at one specific time are conjoined with other economic changes which have occurred over a longer period. According to this theoretical approach, for a variety of reasons, locally based resources for formal social support are less available than formerly in many deindustrializing areas. Families have also changed their income/gathering patterns. Because wives and mothers are working, families have moved from a 40-hour workweek to a 60- to 80-hour workweek, thus reducing the time available for nurturing and supporting and increasing the need for institutional services such as day care. More family members are subject to unemployment and its stresses, and, in general, less support is available both formally and informally. Economic factors as intervening variables in this formulation are also important. They appear early in the formulation and suggest an initial low level of coping potential on the family and community levels.

Yet, another economic factor appears in the work of Ralph Catalano and David Dooley. As we noted in Chapter I, their approach favors an uncovering hypothesis. In contrast to Brenner, Ferman and others who hold a provocation view and therefore hypothesize processes through which unemployment causes distress to the unemployed and others, Catalano and Dooley see that persons other than the unemployed are institutionalized as a result of unemployment. The large number of persons hospitalized, for example, aged 18 and below and 65 and above, is related in the Catalano and Dooley view, to a situation rather similar to a family production function. In such an argument, a certain number of people are required to discharge family obligations and when few workers are available, deviance among needed individuals is tolerated. How-

ever, when there is a surplus of workers, deviance is less tolerable, and when economic times are hard, the emotional and financial burdens that the deviant impose on family units can be borne less easily.

These three theories all focus on economic impact. For Ferman, economic deprivation is directly and indirectly related to negative outcomes as deprivation acts to reduce social support. For Sclar, long-term economic change has weakened and transformed social support networks. Finally, Catalano and Dooley see economic change transforming family responses.

As this review proceeds, it will become evident that many studies designed to rule out one hypothesis in favor of another, such as Brenner's (1973) attempt to dismiss an argument based upon the intolerance of deviance, fail to be completely successful. In fact, even the work of Catalano and Dooley (1979) designed to distinguish between a similar set of arguments—provocation and uncovering—also cannot do so completely. To date, no specific element of one of these overlapping theoretical formulations has been dismissed in favor of another. Role ambiguity and loss (Fried 1979), and economic deprivation, in all its ramifications over time (Ferman and Gardner 1979) still appear together, more or less prominently featured, depending on the specific approach.

This complicated set of alliances between sociological and psychological theories, with a small admixture of labor economics, continues to produce considerable confusion as well as rich and complicated studies. Recently, the work of House (1981) has been revised by Price, et al. (1982). Figure 1 shows a model of unemployment related stress and social support at the individual level which has been amplified to extend to more aggregate levels and thus to include sociological concerns. This paradigm has limitations since it excludes important intervening variables such as capacity at the societal or institutional levels, yet it emphasizes those areas of research where most is known. The powerful correlation of low socioeconomic level with high incidence and prevalence of illness and the association of life events, and their attendant stresses, with illness, can be traced easily through this paradigm.

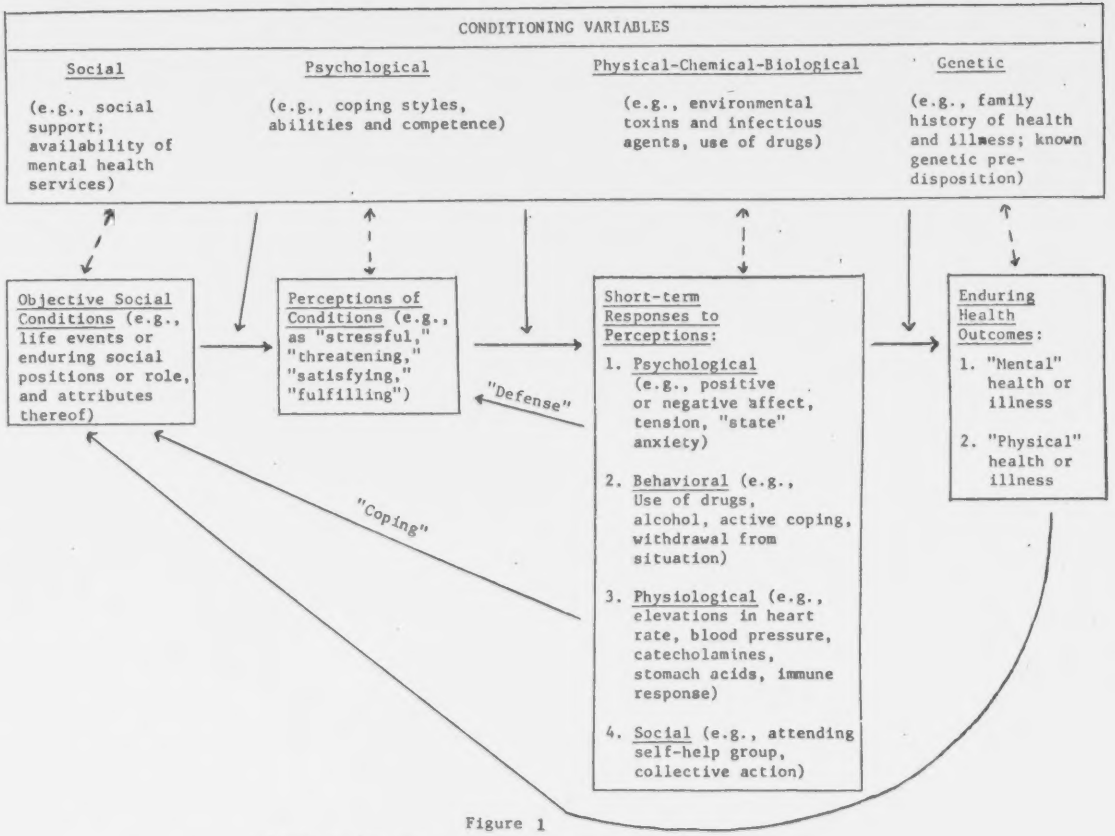

CONDITIONING VARIABLES
Social
(e.g., social support; availability of mental health services)
Psychological
(e.g., coping styles, abilities and competence)
Physical-Chemical-Biological
(e.g., environmental toxins and infectious agents, use of drugs)
Genetic
(e.g., family history of health and illness; known genetic pre-disposition)
Objective Social Conditions (e.g., life events or enduring social positions or role, and attributes thereof)
Perceptions of Conditions (e.g., as "stressful," "threatening," "satisfying," "fulfilling")
Short-term Responses to Perceptions:
1. Psychological (e.g., positive or negative affect, tension, "state" anxiety)
2. Behavioral (e.g., Use of drugs, alcohol, active coping, withdrawal from situation)
3. Physiological (e.g., elevations in heart rate, blood pressure, catecholamines, stomach acids, immune response)
4. Social (e.g., attending self-help group, collective action)
Enduring Health Outcomes:
1. "Mental" health or illness
2. "Physical" health or illness
"Defense"
"Coping"

Figure 1
A Paradigm for Social Epidemiologic Research on Mental Health and Mental Illness
(R. Price 1982: based on J. House 1981)

In summary, this paradigm and its complexity reflects the fact that, in contrast to other fields of social science research, theoretical approaches to studies of the economy and illness have proceeded in several disciplinary paths and have produced new, or newly specified, variables rather than research designs which have discarded some variables and ultimately some theories in favor of others. To date, therefore, the solution to the problem posed by aggregate forces impinging on individual situations to produce aggregate effects, has been to build theories into conglomerates.

One solution to the persistent problem of distinguishing "social selection" from "social causation," is the development of a longitudinal survey of individuals unemployed because of catastrophic circumstances such as several plant closings. These data should be linked to data available in other large data bases to insure that findings could be generalized. Such a study would have the advantage of identifying outcomes for individuals who could, in no way, be considered to have characteristics which "selected" them for either unemployment or poor physical, psychological or social outcomes. This would be a step toward resolution of the major theoretical problem in this area of research.

For, although we may point to a longstanding sociological tradition and a newer psychological stream of research and note that these two types of theoretical approaches have been conjoined at various points, the fact remains that the two general theoretical approaches still remain unreconciled. Are individuals "selected" for negative outcomes on the basis of socioeconomic status, or genetic predisposition, or any other set of variables, for poor labor market attachment confounded with high levels of personal distress and social deviance? Or, do large-scale economic changes impinging on individual lives "cause" these outcomes? The research reviewed below will outline the evidence available at this time and point out the deficiencies in our knowledge, and suggest where the weight of the evidence now lies for economic change and illness.

The theoretical foundations of the models used to discern the processes underlying connections between the economy and physical and mental illness and well-being differ considerably from the several theoretical approaches use in the criminology literature. The sociological and psychological approaches to these issues are less clear and more intricate and their difference less distinct than the criminology literature. Only the approach consistently featured over the past two decades by Ferman and his colleagues in both unemployment and plant-closing research emphasized the economic deprivation associated with poor outcomes in much the same fashion as the ecological school of criminology discussed below.

Economic Change and Social Deviance (Crime): Theory

The number of conceptual approaches that have been developed concerning factors influencing criminal activity is large. A brief list would include approaches emphasizing individual attributes such as genetic background, mental deficiency, personality deviation, or personal appearance, as well as theories stressing environmental conditions or social interactions such as the ecological approach, labeling theory, differential association theory or group conflict

theory. In general, however, empirical studies on the relationship of economic change to criminal activity, or criminology studies that which included economic change as a possible causation, have utilized conceptual approaches that can be categorized into at least four types.

The Anomic Model

A first category of theories embedded in studies of the influence of economic change on criminal activity is that stressing "anomie," or the anomic condition as a primary causal factor in criminal behavior. The adaptation that Merton labels as the deviant behavior "innovation" includes most forms of crime and delinquency. Instead of relying on inadequate legitimate means for attaining culturally transmitted goals, the individual replaces them with illegitimate means. Merton's anomie explanation for crime has been widely used in studies on juvenile delinquency, with an important adaptation represented by Cloward and Ohlin (1960). However, Merton's anomie theory of deviant behavior has rarely been formally tested or formulated together with economic change as a crucial variable. Instead, since Merton's theory emphasizes blocked legitimate opportunity as a precipitant of crime, a number of empirical investigators have added the unemployment rate to their crime causation models as a variable representing change in opportunities that might produce the anomic reaction of crime, especially property crime.

An important adaptation of Durkheim's theory of anomie was put forth by Henry and Short (1954). In their modification of the anomie theory, the flow of the business cycle is seen as a consistent source of frustration for individuals as they struggle to maintain status and to fulfill expectations. Frustration would eventually find its outlet in aggression, and the target selected would depend upon the amount of external restraint to which the individual has been exposed. If the individual has been exposed to strong external restraint due to a high degree of involvement in social relationships or subordinate status, then he or she will find it legitimate to vent this frustration through aggression towards others. If the individual's social relationship position is weak and status high, other-oriented aggression will be less likely held as legitimate, and aggression will be directed at the self. On the basis of their formulation, Henry and Short predicted that the incidence of homicide would be higher for low-status individuals during business expansions and higher for high-status individuals during business contractions, although during business contractions individuals from higher-status groups such as whites, males, the married, and the middle-aged should be more likely than low-status individuals to vent their aggression against themselves through suicide.

The Ecological Model

A second category of approaches to economic change and criminality could be labeled the ecological approach. This title actually covers several separate theories that directly relate criminality to the existence of either poverty or social inequality. If economic change brings about an increase in absolute poverty, crime, espe-

cially property crime, should be seen as likely to increase also. The approaches which emphasize such poverty-related conditions as broken homes, poor schooling, peer pressure and a lack of a stable social organization could be seen in the anomic tradition of Durkheim if these third factors vary in a dynamic fashion with economic change. However, the analysis normally associated with these factors is usually quite static. An exception is the segmented labor market hypothesis. One theorist of this approach (Harrison 1972), has postulated that urban residents of poverty areas who cannot acquire primary labor market employment satisfy their income requirements from a variety of sources including government training programs, welfare payments, secondary labor market jobs, and illegal and quasi-legal activities. With a contraction in the economy, more individuals are forced into this cycle or are forced to increase their illegal activities.

A new ecological approach to crime was recently summarized by Braithwaite (1979) and related to economic change by Danziger and Wheeler (1975). This approach emphasizes social inequality as a primary cause of criminal behavior. In effect this approach may be a newer version of the older "area study" approach utilized by such researchers as Shaw and McKay (1942) or Lander (1954). After an exhaustive review of the literature on social class and crime, Braithwaite concluded that poverty by itself does not cause crime. For that reason, policies designed to lift particular subgroups out of poverty will ultimately fail unless the income and power gap between social classes is reduced and the classes actually physically mixed. Braithwaite bases his conceptual approach on a combination of all the various earlier ecological approaches linking crime rates with poverty and its wide variety of attributes, including segregation of the poor or "warehousing." Thus, economic fluctuations, especially rising business conditions which increase the relative income gap between rich and poor will exacerbate crime.

The Economic Model

The third major category of conceptual approaches is the now well-known and increasingly influential "economic model of crime." This category of crime is directly derived from the neoclassical economic model of individual utility maximization. First formulated by Becker (1968) and given its most elegant and widely used treatment by Ehrlich (1973), the economic model of crime assumes that the criminal is a rational utility maximizer who allocates his available time between legal market activities, illegal market activities, and leisure, based upon the returns from these respective activities and upon the probability of being apprehended, convicted, and sentenced for engaging in illegal activities. The criminal commits crimes not because "their basic motivation differs from that of other persons, but because their benefits and costs differ." Although such a model would seem to have potential for relating economic change to changes in criminal activity, because two of the crucial decision variables are the levels of illegal income from crime and legal income from employment, most versions of this model have stressed the deterrence variables determining the probability of arrest and conviction. The opportunity for legal em-

ployment, usually proxied by the unemployment rate for various age groups, is added on by most theorists employing this model only as an ad hoc variable. The economic model of crime seems to have been generally accepted by most economists until recently when strong criticism of the model's basic assumptions were put forth by Block and Lind (1975) and Block and Heineke (1975). An interesting observation is that although, to a degree, property crime fits Becker's and Ehrlich's concept of an illegitimate market activity, crimes of violence against persons clearly do not. Extending their rational model a bit further to include leisure activities, Becker and Ehrlich label violent crimes as "time intensive consumption activities." Although such activities produce no income or return, they directly meet needs and thus are subject to the same calculus of costs and substitution with legal activities as property crime.

The Radical Model

A fourth category of theories or conceptual approaches that strongly relate economic change to criminal activity is that put forward by Marxist or radical theorists. Two important mainstream criminologists, Radzinowicz (1968) and Vold (1958) have seen the Marxist approach to criminal activity as by far the most committed to economic conditions and economic change. Although Marx himself wrote very little on the subject of crime, a radical interpretation was thoroughly developed by Bonger (1916) and in recent years has received further development by Quinney (1970) and Gordon (1973) among others. As two recent writers on the Marxist approach to crime have summarized, crime activity will increase drastically during periods of capitalist crisis or economic decline as all classes strive to maintain their share of the "surplus." However, as Hughes and Carter (1981) and Reiman and Headlee (1979) point out, this increase in crime is most likely to be seen officially as an increase in street crime or "garden variety" crime committed primarily by members of the working class who have become unemployed against others in their class. This would occur because lower class crime is far more emphasized in the capitalist system by police activities, crime reporting, and by the denial of the existence of "white collar" or capitalist class crime. Although Marxist theories of crime are well-grounded in their theories of alienation, extraction of the surplus, and class conflict, their models have not been subjected to the same amount of empirical investigation as other theories, at least in the orthodox sense.

An important contribution radical theorists may have put forth is the effect of economic change upon the level of "white collar crime." Meyer (1981) has hypothesized that the level of activity of "white-collar" crime should increase "exponentially" during economic downturns as businesses face tremendous adverse conditions. However, Meyer can only base this connection "upon simple logic," since statistical evidence of the volume of "white-collar" crime is almost unknown. Further, others have postulated that some forms of white-collar crime, particularly small-time embezzlement, might actually decrease during economic downturns because opportunity for such crime might decline as unemployment increases.

Conclusions

This review of criminology theories related to economic change is meant as an introduction to a very complex and somewhat confusing set of interdisciplinary theories on criminal activity and economic behavior. Except for Henry and Short's version of anomic theory, all four approaches seem to expect property crime to rise as economic conditions worsen and legal opportunities lessen; they have very little to say about violent crime against persons. The economic approach, until the advent of the "economic model of crime" had been given very little attention in theoretical criminology in this century. Gibbons (1979) notes that economic factors continue to be regarded as having only tangential interest in much sociological analysis, "and criminology is a sub-discipline of sociology." However, the research of a number of economists in the area of relating economic change to criminal activity has produced few dynamic results supporting the relationship.

How these theoretical formulations succeed or fail in explaining observations will be the theme of the following chapters.

III. ARCHIVAL AND EPIDEMIOLOGICAL STUDIES

Economic Change and Physical and Mental Illness: Archival Evidence

The use of archival aggregate data in studies investigating the relationship between economic change and the occurrence of various physical and mental pathologies appears to be a relatively recent phenomenon in the literature. Until the influential work of M. Harvey Brenner in the 1970's, Dorothy Swaine Thomas' classic *Social Aspects of the Business Cycle* (1927) appears to have been the last major time series study of the possible connection between cyclical fluctuations in economic conditions and the wide variety of pathologies that are the subject of this review. Although there has been a continuous research interest in the effect of economic development on mortality in developing nations and the effect of economic change on suicide and homicide rates since 1927, the appearance of Brenner's initial findings (1973, 1976) seems to have sparked a strong renewal of research efforts using time series data to investigate the relationship between occurrence of mental and physical illness and economic change in the United States. A major weakness of the time series approach continues to be the fact that the use of such aggregate data does not allow the researcher to directly link employment history with mental and physical outcomes. Also, the question of causality continues to remain unresolved as well as the further question of at what time lag one should expect incidence of pathology. Strengths of the use of aggregate time series data include the fact that it is easily available, allows for generalization to large populations and by its very nature also allows the investigation of the effect of a wide variety of economic changes on an equally wide variety of changes in pathology over time.

There has been a large number of differing methodologies employed in the archival time series literature. Statistical methods have ranged from the simplistic graphical comparisons, to multiple correlation techniques, to multiple regression analysis, and even to the somewhat arcane use of spectral analysis. There has been a decided trend toward using increasingly complex econometric methods. The major dependent variables have been the official rates of the various pathologies themselves, although measures of other life events sometimes appear "on the left side," as well as possible intervening explanatory variables. The major explanatory economic change variable has been the unemployment rate, or level of employment, usually only differentiated by region. Other intervening or categorical variables, which have been used to subdivide the sample and results, have included demographic variables such as age cohort, sex, race, marital status, ethnic group, and occupational status. However, since such demographic information always comes

from the pathology data, employment status rarely seems to be available for stratification. A further important explanatory variable has been mental hospital and mental health service capacity over time. The literature utilizes a number of different regions and sizes of regions, ranging from city data to national data, as well as time spans ranging from 16 months to well over 100 years.

The bulk of recent time series studies has been concerned with the possible relation of rates of mental illness to economic change, especially change in unemployment levels. The literature connecting various mortality rates of the population to economic change has been of even more recent vintage, and relatively few studies have yet been attempted concerning this potentially crucial policy area. Studies relating suicide rates to economic change have the best claim to a continuing tradition in the literature. In recent years they have included research investigating an economic model of suicide. Each of these three subject areas will be reviewed in turn. The archival literature can be categorized into three separate types of results showing the possible relation between economic change and the occurrence of mental and physical pathology. Such categories would include (a) Brenner and his supporters whose results indicate a positive relationship between undesirable economic change, as a social causation, and mental and physical illness, (b) those who support Brenner's position, but with theoretical qualifications, and, (c) those whose results argue that economic change either is not a primary causal agent in the development of mental and physical illness, or that it is, instead, desirable economic change that promotes the development of the various pathologies.

Mental Illness

The most comprehensive and influential research relating changes in rates of mental illness to economic change has been the work of M. Harvey Brenner (1973, 1976, 1979). In *Mental Illness and the Economy*, Brenner correlated admissions to New York State public and private mental hospitals for the period 1914–1967 with a New York manufacturing employment rate for the same period. Brenner's essential finding, using a variety of statistical methods, was that mental health admissions were strongly and inversely related to changes in manufacturing employment levels, especially at a lag of one to two years. Brenner also found this inverse relation between manufacturing employment and mental hospital admissions to be stable over the period 1850–1967, and to hold when long-term trends in admissions and employment were taken into account. Brenner used background information on mental hospital admissions records to disaggregate his essential overall relation for various demographic groups. The group demonstrating the strongest inverse relationship between mental hospital admissions and manufacturing employment were males aged 25–65. However, increased mental hospital admissions were found associated with increases in manufacturing employment or good economic conditions for the very old and the very young, and for those with lower educational attainment. Other important background variables affecting the strength of the inverse relation were economic status, ethnic background, and marital status.

Brenner extended his analysis of mental hospital admissions and economic change with the use of national data in 1976. Using a multiple regression model to test simultaneously the influence of a number of economic change variables on mental hospital admissions, Brenner found admissions strongly and positively related to the unemployment rate and inflation rate of the United States data for the years 1940–1971, with the effect spaced over a five-year period subsequent to economic change. A weaker positive relationship was found between admissions and per capita income. Once again, Brenner discovered an inverse relation between undesirable economic change and admissions for individuals over age 65. Brenner has concluded that his empirical results provide proof for the social causation or provocation theory of the effect of economic change on mental illness.

In particular, Brenner contends that the fact that middle-aged high economic status males demonstrate the most adverse reactions in terms of mental hospital admissions during economic downturns is strong support for the argument that loss of socioeconomic status is a prime causal factor in the incidence of many types of mental illness. If loss of socioeconomic status is not itself a prime casual agent for the development of mental illness, the loss of resources connected to socioeconomic status due to undesirable economic change could be seen as an important factor in the development of mental illness. This would occur because these resources would not be available to help mediate the stress of significant life events which could also be accelerated by undesirable economic changes such as unemployment or increased inflation.

The most persistent and important critics of Brenner in the archival literature on mental illness and economic change have been Catalano and Dooley (1977, 1979). Using a complicated study design and combining survey and archival data for the Kansas City, Missouri Standard Metropolitan Statistical Area, for a 16-month period in 1971–1973, the authors attempted to test Brenner's "provocation" hypothesis against their own "uncovering" hypothesis. They found mental hospital admissions (drawn from archival data) and life events and pre-admission symptoms of mental illness (drawn from a survey) were positively related to undesirable economic change such as an increase in the unemployment rate or a decrease in their measure of absolute employment. However, it was also found that the measures of pre-admission mental illness were not significantly correlated with mental hospital admissions. Catalano and Dooley contended that their results supported the uncovering theory of the relation between economic change and mental hospital admissions. The general conclusion was that the increase in mental hospital admissions during periods of economic decline is not due to an increase in mental illness in the population but instead is caused by an economically induced increase in the institutionalization of those already mentally ill. This could occur because of increased intolerance for the mentally ill in families facing economic hardship. Catalano and Dooley (1981) replicated their Kansas City study, for Washington County, Maryland, using archival and survey data measuring similar variables between period 1971–1974. Economic change was not significantly related to survey-measured life events or depressed mood symptoms in this

study of an essentially rural environment. The authors, however, did not introduce utilization of mental health care services in their study, as a dependent variable.

Catalano and Dooley's research efforts are meant to provide an empirically tested dynamic explanation of the possibly complex process that must take place between the occurrence of economic change and the drastic outcome of mental hospital admission. Such an explanation is not provided explicitly in Brenner's research. Catalano and Dooley's results also constitute a strong implied criticism of Brenner's use of changes in mental hospital admissions as a proxy for changes in the rate of mental illness in the population. Yet Catalano and Dooley's empirical results could be called into question on purely methodological grounds. The time span of their studies provided few observations of economic change, and the economic changes that did occur were small and at low rates of unemployment. Further, the symptom measures of mental illness in the population used may have not been appropriate for the type of mental illness precipitated by undesirable economic change.

Brenner's position has been both supported wholeheartedly and supported with qualifications by recent archival studies. An example of the latter is the study performed by Marshall and Funch (1979). These authors forcefully argue that mental hospital capacity should be introduced into the relation between economic change and mental hospital admissions, since changes in capacity over time could affect the perceived relationship. The authors replicated a portion of Brenner's 1973 study for the period 1916–1955, directly introducing hospital capacity and lagged admissions as further independent variables. Their results once again demonstrate a positive relation between undesirable economic change (reduced manufacturing employment) and mental hospital admissions of economically active individuals (age 15–65). Although the mental hospital capacity did explain a significant proportion of the variance in mental hospital admissions, the results on the relation between economic change and lagged admissions were almost identical to Brenner's.

A more recent time series study by Barling and Handal (1980), using quarterly admissions data for the St. Louis SMSA for the period 1970–1975, correlated the local unemployment rate with two types of mental hospital first admissions, inpatient and outpatient services. Using background information, inpatient first admissions were found to be positively related to the unemployment rate at a lag of about six months for those who had only partially completed high school, or who are housewives, students, or retired. On the other hand, outpatient first admissions of housewives, students, and the retired fell, at a lag of six months, with increases in the unemployment rate.

That lower socioeconomic groups were the most significantly affected segments of the population during periods of economic change runs counter to an important theoretical premise held by Brenner, namely that higher socioeconomic status groups should be most affected. However, Barling and Handal did find a strong positive relation between the unemployment rate and inpatient first admissions of those whose economic status at time of admission was unemployment, stating "that 27.6 percent of all inpatient first

admissions were unemployed at the time of admission compared to an average of 6.05 percent unemployed in the St. Louis Metropolitan Area." Although such a finding still does not determine causal direction, it is significant because of the fact that it may be the only study in the archival literature where immediate work history or employment status has been linked to mental hospital first admissions.

Finally, Barling and Handal's empirical results seem to have been duplicated by Cahill, Hamer, and McGurrin (1981), in their study of the relation between unemployment and all types of public medical health care utilization in the City of Philadelphia for the period 1972–1980. These authors, however, find very little evidence of a lag between undesirable economic change and increases in mental health care utilization.

A very recent empirical study carried out by Frank (1981), attempted to test hypotheses put forth by Brenner (1973) and Catalano and Dooley (1977, 1979), concerning the effect of economic change on the mental health of various demographic groups. Frank's mental health indicator was a set of monthly observations of outpatient and inpatient first admissions to all facilities of the Hawaii State Mental Health Service, for the period September 1972 through December 1975. These admissions were broken down by age, sex, income, and education levels. Frank correlated these monthly case opening figures with four separate economic change variables, including a measure of absolute employment change, and the unemployment rate. Frank especially emphasized the "uncontaminated setting" of her study, noting that the relative isolation of the Hawaiian economy and population would ensure that the health and behavioral outcomes of economic change, and the sources of that change, would be confined within the borders of the same political-economic defined community.

Frank's statistically significant results included a strong correlation between male admissions and economic downtowns at a lag of three-months as well as a correlation between female admissions and economic upturns, with no intervening lag period. The first result is seen by Frank to be supportive of Brenner; the second directly contradicts findings reported by Catalano and Dooley in their earlier studies. Frank's results did not support other hypotheses concerning the susceptibility of other various age, income, and education level demographic groups. Frank also states that her significant results for a three-month or short lag period between economic change and the effect on mental illness admissions contradict Brenner's use of much longer lags of one to five years. However, Frank does not test for the existence of a longer lag. The fact that her correlations between economic change and admissions are somewhat weaker than Brenner's findings may be due to the fact that she does not include long-term effects in her correlation analysis.

An important study that not only emphasizes the effects of cyclical economic change and changes in mental health care capacity, but also introduces a new factor of long-term economic change and its social ramifications, to explain variation in the rate of mental illness, is Sclar and Messeri (1981). Sclar and Messeri collected outpatient mental health care utilization data for the Fitchburg, Mas-

sachusetts area for 1965–1977, and related variation in the number of cases to three major explanatory variables: the number of mental health care staff hours worked, which is used as a proxy for mental health care capacity; changes in the population; and the local unemployment rate. They then derived a predictive equation which was used to "decompose" the trend in mental health outpatient case openings over the period.

Using their technique, the authors states that from 20 to 40 per cent of the increase in the mental health outpatient caseload over the period, was brought about by an upward drift in the average rate of unemployment. Capacity increases explained a further 20 to 23 per cent, and population changes explained an additional 17 to 19 per cent of the increase. A possible further unexplained 17 to 43 per cent of the increase in the trend of the mental outpatient caseload could be attributed to other types of long-term secular economic change. This other secular economic change is identified as regional economic stagnation resulting from general increases in the size of firms and the scale of production. Such stagnation brings about the erosion or actual destruction of much of the crucial informal support structure used by individuals to mediate stress.

The loss of such traditional locally based social support could increase mental health care utilization both by inducing unmediated stress-induced mental illness, and by forcing individuals to rely on formal systems of social support such as the mental health system. Thus, from the findings of Sclar and Messeri's study, economic change as a causal agent receives its strongest support as the effect due to both secular increases in unemployment and economic stagnation which taken together, may be responsible for 60 per cent of the increased trend in outpatient mental health care cases observed by their study.

Mortality

There have been, as yet, relatively few archival studies concerning the possible relation between economic change and mortality rates for the population, apart from those studies dealing with the suicide and homicide rates. The most complete recent treatment is that of Brenner (1976, 1979). In 1976, Brenner examined the possible influence of the unemployment rate, inflation, and per capita income upon general mortality in the United States as well as mortality for specific causes associated with psychological stress such as cardiovascular disease and cirrhosis of liver. The study period was 1940–1974. The results were broken down by age and sex. Brenner found a strong positive relation between the unemployment rate and all the various rates of mortality, if the relation was lagged out over a subsequent five-year period.

In 1979, Brenner extended his analysis to examine the influence of rapid economic growth on the various total and psychological stress-related mortalities. The measures used for rapid economic growth were residual deviations from the long-term trend in per capita income, tested at the same time as the unemployment rate. Brenner's results in this study showed both desirable and undesirable economic change significantly and positively related to mortal-

ity rates. Brenner's findings in this study showed both the rate of unemployment and cyclical changes in per capita income as positively related to rates of mortality.

Brenner introduced the "principle of the acceleration of stress" to explain the strong positive relation between unemployment and mortality, as well as why the full effect of an increase in unemployment on mortality may take up to five years to accumulate. According to this principle, the loss of a job not only brings about stress for the unemployed due to loss of income and occupational status, but also brings about additional stress by initiating a chain of further undesirable life events such as divorce, bankruptcy and migration. Such a downward spiral of undesirable life events may increase the susceptibility of the unemployed to stress-related chronic illness that takes years to develop and finally run its course. On the other hand, Brenner notes that rapid desirable economic change produces damaging amounts of stress only in the short run. The stress produced by economic success (such as increased work hours and responsibility) is primarily associated with temporary fear of failure. It is not likely to be associated with a chain reaction of further stress-provoking life events, as is the case with permanent job loss.

The strongest critic of Brenner's findings connecting increases in mortality rates to increases in undesirable economic change has been Eyer (1977a, 1977b). Eyer points out that a simple graphical comparison of the U.S. mortality rates and the national unemployment over time reveals that mortality usually falls when unemployment rises. In particular, Eyer points out, the largest declines in mortality in the U.S. over the last one hundred years, have occurred at the same time unemployment was rising. Eyer argues, instead, that economic prosperity, or desirable economic change may be positively related to increases in mortality. This may have been true before the introduction of successful treatments of infectious diseases because economic prosperity was linked with increased migration and overcrowding of the lower working classes. These were important factors in the outbreaks of major influenza epidemics. Increased prosperity may be linked to increased mortality today, Eyer contends, because of the unhealthy nature of the bulk of the economic product now consumed, and because periods of rapid economic growth are also periods where significant job-related stresses due to overwork, community breakdown, and migration are also seen to increase.

This impact upon mortality due to increased economic prosperity, Eyer argues, should occur coincidentally. Brenner's technique of measuring the impact of an unemployment increase on mortality over the following five years is not legitimate, Eyer feels, because in the course of that time period an economic recovery has already either started or peaked and mortality increases connected to it would be mistakenly attributed to the prior economic recession. The influence of unemployment on mortality should also only occur in the short run, since the only physiological study of the occurrence of stress-reactions to involuntary unemployment (Kasl and Cobb 1979) did not reveal a long-term continuing pattern of physical stress reactions for the unemployed. Eyer concludes that the most likely quantitative estimate of the contribution of unem-

ployment variation to the business cycle variation of the death rate "lies somewhere between 1 and 5 per cent," and this small contribution is heavily dependent upon variation in the suicide and homicide rates with unemployment.

An independent test of the Brenner and Eyer debate on whether desirable or undesirable economic change is positively related to mortality may have been provided by the very recent study effort of Heller and Kasoff (1980). These two authors tracked various disaggregated mortality rates for the Dayton, Ohio SMSA over the period, 1968–77, and compared these movements to the area's unemployment rate. The Dayton area experienced three separate sharp increases in unemployment levels during the period, the last two episodes coincident with the outbreak of national recession, and the first was an entirely local wave of massive layoffs. After each episode of sharply increased unemployment, the heart disease and cerebrovascular mortality rates, especially for males aged 45–64, began to rise in precisely the pattern hypothesized by Brenner, reaching a peak somewhat over a year to two years after the unemployment peak and gradually declining over the following two years to their prior levels.

In contrast, the national mortality rates during this period showed a generally long-term trend of decline, even during the period of the 1975 recession when U.S. rates almost matched the Dayton area unemployment rates and sometimes exceeded them. Since Dayton is generally a heavily industrialized area, with a strong economic concentration in the auto industry, the pattern of traumatic permanent layoffs experienced there may have been more stress-inducive than that caused by unemployment nationally. This incongruence between national and local patterns on mortality and economic change argues for further regional studies of the type already begun by Heller and Kasoff, if there is to be a resolution of the debate on whether it is desirable or undesirable economic change that most powerfully affects mortality.

Suicide

In contrast to the archival literature relating economic change to mental illness and stress-induced physical illness, the empirical research relating economic change to the rate of suicide, after a period of debate, seems to resolve itself to a single position. It is now generally agreed that the rate of suicide is positively related to undesirable economic change. Durkheim (1897) originally contended and set out to prove that the suicide rate "varies directly as anomie and inversely as social cohesion." Anomie and social disorganization, Durkheim maintained, could be generated in the population by economic crises, whether they were rapid upturns or downturns in economic activity. However, the direction of economic change most associated and possibly responsible for increases in the suicide rate was, until recently, the primary source of debate in the literature.

Henry and Short (1954), examined the relation between cycles of a general national business indicator and U.S. suicide rates for various periods prior to 1948, and found for the population as a whole, that suicide tends to rise during periods of depression and fall

during periods of prosperity. The authors found this especially true of high status groups in the population such as white married males under age 65. Henry and Short maintained that their results provided strong support for their "frustration/aggression" adaptation of Durkheim's anomic theory of suicide.

Pierce (1967) used a different indicator of general business activity, absolute change in a stock price index, and found a strong positive correlation between absolute economic change lagged one year, regardless of its direction, and the U.S. rate of suicide for the years 1919–1940. When Pierce attempted to determine whether it was desirable or undesirable economic change that was positively related to the rate of suicide, the results were insignificant and unsupportive of either position. Brenner (1976, 1979) regressed the U.S. suicide rate, for the period 1940–1973, on the national rate of unemployment and a measure of rapid economic growth, at various lags. Generally, Brenner found the suicide rate positively and significantly correlated with the unemployment rate, but his results on the influence of rapid economic growth appeared to be mixed.

An impressive socioeconomic model of suicide, first developed by Easterlin (1980), has recently been tested by Schapiro and Ahlburg (1982), and appears to have important implications with respect to the relative impact of unemployment on the suicide rates of various age groups. According to the relative-cohort size hypothesis it is the relative size of an age cohort of the population that determines both its level of material aspirations and potential for economic success. A relatively large age cohort would be most likely to suffer long-term adverse labor market outcomes, since individuals are usually forced to compete for jobs with members of their own age group only. If members of a relatively large age cohort are offsprings of relatively small age cohort, they are likely to possess relatively high income aspirations because of the favorable labor market experience of their parents. This gap between relatively low income outcomes or economic means and high income aspirations is likely to produce considerable stress for this cohort throughout their working lifetime. Essentially this theory was an anomic model that considers both means and aspirations as determined by the relative size of the age cohort in comparison to other age cohorts.

Other researchers have also connected relative cohort size to imperfect socialization during childhood, which would later lead to divorce and the inability to cope with adversity. The effect of relative cohort size is also seen to operate differently for males and females, since females from different age cohorts can usually compete with each other in the labor market. Ahlburg and Schapiro tested the relative cohort size model on U.S. data for the period 1948–1976. Their model allows for a direct and indirect effect of changing relative cohort size on the rate of suicide, the direct effect arising from impacts on levels of aspirations and economic success, and the indirect effect operating primarily through relative cohort size's impact upon the divorce rate, which has itself been significantly correlated with the suicide rate. The authors' results are particularly significant for males, whose rate of suicide was found to be significantly and positively correlated with cyclical unemployment. As the large baby boom generation of males grows older, it is predicted that

their relative negative labor market performance will continue and their suicide rate rise further. In contrast, the new "baby bust" generation born in the 1960's and 1970's will experience better relative economic outcomes and possess lower aspirations, thus leading to a drop in the suicide rate over the long run.

The importance of Ahlburg and Schapiro's results is that they not only reaffirm the positive empirical connection between changes in unemployment and the rate of suicide, but also provide evidence that some age cohorts are far more susceptible to the stress of unemployment than others. The Easterlin relative cohort size model may also be useful for investigating to relative susceptibility of various age cohorts to other pathologies, physical and mental, induced by the stress of economic change.

Conclusions

The brief review of archival evidence presented above may suggest that consensus has not been reached in the literature of studies investigating the relation between economic change and the occurrence of physical and mental illness. However, in the empirical sense this is not true, since almost every researcher in the last nine years, including Brenner's critics, has found some positive relation between changes in unemployment rates and some type of mental health treatment rate for at least some segment of the population. In the case of the suicide rate, the demonstrated connection with unemployment has proven to be even stronger, while no convincing archival empirical study has surfaced to refute Brenner's findings on the statistical connection between unemployment and various types of psychological stress-induced mortality.

It is true that the estimated lag period between the occurrence of economic change and the onset of pathology has varied from six months to five years, and that unemployment change has been estimated to cause anywhere from one to sixty percent of the overall variation in pathology. Yet, the positive statistical connection between undesirable economic change and officially recorded indicators of pathology remains significant. The important remaining causal question, then, is what does this demonstrated connection really mean?

It is not enough to show that undesirable macroeconomic change is usually followed by an increase in official measures of pathology, such as mental hospital admissions, to prove negative economic change actually causes the occurrence of mental or physical illness. Some third factor, such as family intolerance during hard times, could be responsible for the impression of a causal relationship between unemployment and mental illness that may not exist. In the case of the possible relation between economic change and mortality, the mere specification of how long it takes undesirable economic change to have its full impact upon mortality may mask a possible true relationship between desirable economic change and pathology. This is a thesis for which there is considerable evidence in the medical literature, for economic "good times" do seem to bring about many more unhealthy consumption behaviors on the part of the population than during periods of mass unemployment. Before one can place confidence in estimates of how much a pathology

among the population will change in reaction to a change in economic conditions, there should be some confidence in knowing how economic change brings this reaction about. Perhaps exact predictions, such as Schapiro and Ahlburg's suggestion that a "one percentage point increase in the unemployment rate is associated with about 318 more suicides," or Brenner's publicized 1976 estimates of the social impact of unemployment, should be only used with caution until more convincing proof has been attained with the use of individual based survey studies. Dr. Brenner's current work, which emphasizes the possible role of many possible intervening variables, and allows the simultaneous testing of alternative hypotheses, besides his own, should provide a major advance in the investigation of how undesirable economic change or desirable economic change has an impact on physical and mental illness.

Economic Change and Social Deviance (Crime): Archival Evidence

The majority of empirical studies relating criminal activity to economic factors have utilized archival aggregate data to test hypotheses. As Long and Witte (1981) point out in their excellent summary review of empirical research on economic factors and crime:

> Researchers have not used aggregate data by choice, but rather have been forced to use it because of the lack of appropriate data for individuals.

Since most of the models relating economic factors and crime are models of individual behavior, the use of aggregate data, Long and Witte further note, often involves unrealistic assumptions. Archival crime statistics almost seem to have a traditional established literature of criticism. Almost every researcher who has dealt with these statistics first lists their deficiencies. The major source of dependent variables for the bulk of the economic factors and crime studies are the FBI's *Uniform Crime Reports* (UCR) for the seven major indexed crimes. The UCR are aggregated by area and the consensus seems to be that they are anything but uniform, because of different recording practices of different police jurisdictions (due either to political practice or to police efficiency) and different regional concepts of crime definition and practices of reporting crime. Juvenile delinquency studies sometimes use other types of dependent variables, such as court appearances, since crimes committed by minors may not be fully reflected in arrest or clearance statistics. When the UCR data been used, the number or rate of offenses, by crime category, or aggregated into the two major subdivisions of violent and property crimes, is primarily used as dependent variables. However, levels and rates of arrests and/or imprisonment have been used as dependent variables by some researchers, as well as non-UCR indicators, especially prior to 1952. As noted above, the overwhelming emphasis on the seven "garden variety" street crimes has been criticized by some for its inherent class bias and exclusion of indicators of "white collar" crime.

There have been four major groups of economic factors or variables reflecting economic change in the literature. The first group includes general business indicators, which appear in earlier studies conducted before the computation of more reliable economic sta-

tistics. A second group includes measures of employment and unemployment rates, often broken down by demographic categories. A third group includes various income measures, sometimes designed to proxy returns to legal and illegal market activity. A final group of indicators has been designed to measure relative economic deprivation or social inequality. Inflation, or the rate of change of price increases has rarely appeared in the literature until recently, and the theoretical significance of its use has not been made clear, except where it has been used in early studies as a measure of prosperity.

There are many "third factors" in the literature on economic change and crime, and a discussion of some will be included in the following review of the studies. These include many independent variables ranging from the influence of broken homes to the level of expenditures on police and length of sentences. In fact, in order to provide a review of sufficient breadth of the effect of economic change on crime, it has been necessary to include studies where the economic change variable itself is actually a "third factor" or intervening variable. A persistent source of socioeconomic variables, especially in the cross-sectional archival literature has been U.S. Census statistics on communities which are related to UCR crime rate data for that decennial year.

Longitudinal or Time Series Studies

In his comprehensive review of empirical studies on the relationship between economic fluctuations and crime prior to 1937, Sellin (1938) notes that although there were many important studies performed in Europe during the nineteenth century relating economic fluctuations to rates of crime, nothing appeared in America until 1922. The early European studies can be summarized, Sellin notes, with a quote from Van Kan (1903):

> Crimes against property find in large measure their indirect causality in bad economic conditions; their direct causality in acute need and even more in chronic misery. . . . Material well-being generally exalts the vital instincts, increases alcohol consumption, and therefore increases crimes against morals. All our literature confirms this fact. . . . As for the question of the extent of the influence of economic factors on offenses against persons, the answers are less uniform.

Sellin's own summary of the findings of a number of American and British studies completed in his period, all using time series data prior to the onset of the Great Depression was this:

> There is little agreement in the conclusions of these studies except for offenses against property and especially for the violent offenses of that class, i.e. burglary, etc., where fairly high negative correlations were found for both England and Massachusetts.

Sellin also complained of the wide variety of economic indexes used, not all of equal value, and of a "lack of comparability in the classification of offenses."

In her influential studies of crime rates and business fluctuations, Dorothy Thomas (1925, 1927), constructed her own composite of British business activity for the period 1854–1913, and her crime statistics were prosecutions per 100,000 for a number of offenses. As Sellin points out, Thomas was the first researcher to use sophisticated statistical techniques in her investigation, correcting for secular trends and correlating business cycles and cycles of crime.

Thomas' best correlation results were those for prosecutions for "property crime with violence" (robbery, burglary, house and shop-breaking, extortion and sacrilege).

An important study of economic fluctuations and crime (Henry and Short 1954), utilized an adaptation of Durkheim's anomie theory for a conceptual framework. The major dependent variable was the rate of homicide measured by U.S. Death Rate Statistics as well as UCR data for aggravated assaults, burglary, and robbery reported to police. Two types of property crime rate cycles were also correlated to the business cycle. The only economic change variable used was an index of industrial activity in the United States. Henry and Short's results showed the homicide rate was positively correlated with the business cycle. This was true for non-whites, while the homicide rate for whites showed a strong negative correlation with the business cycle.

Henry and Short's results on the property crime rates for robbery and burglary show a strong negative correlation with the business cycle except during the final stages of prosperity. Henry and Short's property crime results were for a relatively short period between 1929–1949 using a ten-city sample and no third-factor variables. Henry and Short's final conclusions were that their status-modified anomic model of frustration/aggression was justified by the statistical results. Homicide rates for whites rose during periods of business decline, as this group would feel most threatened by loss of economic status during such a fluctuation, while nonwhite homicide rates rose during periods of prosperity, as this group would be most likely to suffer frustration due to loss of status from being denied equal participation in the economic gains made by others.

In an important time series study of the property crime rate and unemployment rates, Glaser and Rice (1959) introduced age as a third explanatory variable determining the sign of the relationship between unemployment and the rate of property crime. The authors tested hypotheses of a positive relation of property crime rates for adults and a negative relation of property crime rates for juveniles with age-specific unemployment rates with both national and municipal data. While providing support for the hypothesized age-specific relationship of property crime and unemployment, the national data also revealed a negative correlation between unemployment and property crime offense arrests for those over age 35. Municipal data for the time period 1930–1956 from the cities of Boston, Cincinnati, and Chicago did not confirm this negative relationship of unemployment and property crime for those in the older age categories.

Glaser and Rice concluded that their important findings relating unemployment positively to property crime arrests for those over 20, and especially for males aged 20–44, support a number of theories on both age and sex roles in American society and on anomic criminal behavior. The negative relationship of property crime with unemployment for juveniles gave further support to the contention that "unemployment is closely and directly related to criminality for males only when they are most strongly oriented to occupational stability or mobility."

The important work of Fleisher (1963, 1966a, 1966b) provides support to the proposition that adverse economic change has a strong positive effect upon juvenile delinquency and youth crime. In his 1963 study, Fleisher first points out that a large proportion of all types of crimes are committed by those under age 25. Fleisher then replicated Glaser and Rice's study using their data but more sophisticated statistical techniques that correct for the influences of the war years, time trends, and crime recordkeeping changes that occurred in 1952. His results were both strong and significant, and an elasticity of up to .25 was predicted, meaning that a 100 percent increase in the unemployment rate would be matched by a 25 percent increase in the rate of juvenile delinquency. Singell (1967) in a similar smaller study, using data from the City of Detroit for 1950–1961, partially replicated Fleisher's findings, although the influence of local unemployment changes proved to be far less significant in explaining variation in delinquency.

Phillips, Voety, and Maxwell (1972) advocated a different labor force measure of economic change in their paper on larceny crime for eighteen- and nineteen-year-olds, that of labor force participation. In a demographic model of crime, the authors note that while unemployment rates for youth have fluctuated over a period of steadily rising property crime, youth labor force participation has steadily dropped. The authors conclude that those who are actively looking for work are probably much more like those actually employed than youth who have dropped out of the labor market altogether. Their explanatory variable then is a construct derived by dividing the sum of those working and looking for work by the total non-institutional population for those aged 18–19. The authors ran two separate regressions, for whites and non-whites, using UCR data for the period 1952–1967 and achieved very significant and powerful results for their model, emphasizing the labor force/not in the labor force distinction. The authors felt that their results explain much of the apparent paradox between almost exponentially increasing rates of crime during the 1960's, and falling unemployment rates. Unfortunately, by limiting their empirical investigation to just one form of property crime, larceny, and to one small segment of the youth age distribution, they limit the generality of their results.

Gansemer and Knowles (1974), attempted to relate the level of property crime in a growing municipal economy, the city of Los Angeles, by correlating absolute levels of "Part I" crimes against various measures of economic activity over the period 1960–1972. "Part I" crimes are the seven major indexed crimes, including burglary, larceny, robbery, auto theft, homicide, rape, and aggravated assault. The thesis was that the absolute levels of these crimes are related directly to positive business indicators. Three separate economic indicators, bank deposits, retail sales, and employment were used. The authors found high positive and significant correlations of levels of all types of street crime to these indicators, which they consider as indirect support for the economic model of crime. Unfortunately, although the authors can conclude that increased opportunity for crime, represented by a growing economy will result in increased levels of crime they cannot comment on how these changing economic conditions affect the rate of crime since their

dependent variable was not a rate, or in other words, was not the number of Part I crime per some level of population. Since the population of Los Angeles grew at a rapid rate over the period studied, the authors can give no reason to believe that the level of crimes committed would have grown no matter what the change in economic conditions. The missing variable, population, could also rise with the economic indicators, thus proving to be a serious source of spurious correlation in the authors' results.

Danziger and Wheeler (1975) introduced a relatively new economic change variable, changes in the distribution of income. The contention is that crime rates are strongly affected by interpersonal welfare comparisons, or that it is the relative level of legitimate income that is crucial in determining the individual's allocation of time between legal and illegal market activities (crime). This relative level of legitimate returns is given a theoretical construct measure, the "absolute income gap variable," which is a measure of the distance "between an individual's income and the average income of his reference group." As the "gap" widens, the propensity for criminal behavior should increase. Empirically, this gap was estimated using Gallup Poll results for an absolute income minimum question asked since 1937 and Internal Revenue Service data on income. The "reference group" is those who possess higher than average national U.S. incomes and the distance between their mean income and the mean income of the lower group, adjusted with a lag by Gallup Poll results, constitutes the "gap" variable.

The gap variable was tested along with traditional economic models of crime deterrence variables and the unemployment rate on national UCR robbery, burglary, and aggravated assault rates for the period 1949–1970. The gap variable was upheld as powerful and significant, as were the deterrence variables. It was concluded that the relationship between absolute income and the crime rate is actually positive, for it is the distribution of income that is significant in situations which crime question is associated with economic factors. Since the maldistribution of income is likely to worsen during economic upturns or periods of prosperity, and this maldistribution is likely to be less pronounced during economic downturns, Danziger and Wheeler conclude that their relative income hypothesis explains the fall in crime rates during the Great Depression and strong rise during the prosperous 1960's.

As a final example of time series studies relating economic change to crime, the recent work of M. Harvey Brenner (1976, 1979) should be considered. In sharp contrast to other researchers in the literature, Brenner does not specify a theoretical model prior to his empirical investigation of the national homicide and imprisonment rates. Thus Brenner's apparent commitment to the unemployment rate as the prime explanatory variable is not supported on explicit theoretical grounds. Brenner's selection of the rate of imprisonment as the major dependent crime statistic is also not justified on theoretical grounds. The rate of imprisonment has been shown to be highly dependent on a wide variety of other criminal justice factors such as the rate of arrests, prosecutions, and judicial preference for sentencing. It has been noted, in the criminal justice literature, that sentencing becomes harsher and the probability of probation or parole falls with the lack of employment opportunities

during periods of high unemployment. None of these considerations depends upon an increase in the crime rate due to declining economic conditions as a causal condition.

Also, while Brenner finds a positive relationship between per capita income and the rate of imprisonment, he replaced this variable for "interpretation" reasons with time trend variables and a variable reflecting the proportion of males 15–29. Although the demographic variable has been supported elsewhere in the literature, the substitution of per-capita income with time trend variables has not. In fact, as we have seen, there are several theoretical interpretations that would support a positive relationship between the rate of crime and per capita income over time. If, however, Brenner merely intends the imprisonment rate to reflect a serious social cost (in terms of tax dollars spent on incarceration of individuals) that moves with the unemployment rate, and not some implied theory of social deviant behavior related to economic change, these criticisms are not well-founded.

In general, Brenner does find strong, significant, and positive results relating the unemployment rate to rates of imprisonment at lags of 0–2 years on time series data for the period 1935–1973 (excluding the war period). Brenner also finds a positive and significant relation between the rate of inflation and the rate of imprisonment, although this relation is not as strong as that for unemployment. Since inflation and unemployment were strongly and inversely related in most of Brenner's time series data (until the 1970's), it becomes difficult to reconcile the fact that both unemployment and inflation are positively related to the rate of imprisonment. Because of the probability that a statistical problem called "multicollinearity" is present in Brenner's results, his statistical results should be regarded critically until this possible problem is explained or resolved.

Brenner's results relating the rate of homicide to a variety of economic indicators can be criticized on many of the same grounds, and in this case, Brenner cannot escape behavioral implications. Since the majority of the studies in the time series literature on economic factors and crime have stressed property crime, both in theory and in empirical results, and have generally found the relationship between violent crime and unemployment to be statistically insignificant, Brenner's results showing a strong positive correlation between both unemployment and the rate of inflation with the homicide rate stand almost alone in the literature. No apparent theoretical consideration is given to the question of why homicides should rise to a peak several years after an unemployment increase, and then slowly decline thereafter, except that this lag seems to best fit the data. On the other hand, the fact that violent crime has received relatively little attention in the literature because it does not fit certain theoretical models (excepting Henry and Short), seems to call for new empirical investigation of this form of violent crime and economic change.

In conclusion, time series studies of the relation of economic change or the business cycle to criminal behavior have shown, in a limited way, that certain types of property crime are positively related to undesirable economic change. Critical remaining questions include the type of economic change most closely associated with

crime, and at what time lag the reaction to economic change occurs in the form of criminal activity. Further, time series studies have suffered from a lack of consistent relatable data both in terms of measuring crime and economic change. Finally, many important socioeconomic variables are not available in time series, and these potentially crucial intervening influences either cannot be considered, or must be proxied by imperfect substitute variables.

Cross-Sectional Studies

Archival cross-sectional studies relating economic factors to criminal activity have had a long and honored place in the criminology literature. However, while earlier studies were primarily ecological studies that attempted to relate the condition or attributes of poverty to criminal activity, recent cross-sectional studies have emphasized the economic model of crime. It is difficult to draw conclusions about the effect of economic change on social deviance from archival cross-sectional evidence since this type of study, by definition, only examines criminal activity and economic conditions at a particular point in time. There is some doubt as to what these studies can offer on the subject of the influence of the business cycle or macroeconomic change, especially at the national level. Usually these studies investigate individual states, SMSAs, or tracts within a city for which rich data are available during census years. If economic conditions vary widely across the usually politically defined observations, then some test of their influence and their sign and strength can be made.

Perhaps the most influential study in recent years on the importance of economic factors in influencing criminal behavior is that of Ehrlich (1973). Ehrlich's theoretical model relies upon three important variables, two of them economic factors subject to change. The non-economic factor is the probability of arrest and incarceration for illegal activities, or the effectiveness of criminal justice activities and the average length of sentence. Ehrlich introduces these factors into his model in a simultaneous way in order to allow for the fact that areas with high crime rates also seem to exhibit strong police activity. The two economic factors are the return to legal market activities and the return to illegal market activities, which Ehrlich models empirically by the respective use of the percentage of families below one-half of the median income level of a state, and median income level itself. Ehrlich's 1973 findings using 1960 UCR data for the seven major indexed crimes and U.S. Department of Justice imprisonment statistics, as well as government income data, across U.S. states, conclusively support his model.

Ehrlich found all types of crime to vary inversely with the deterrence variables. The four major property crimes were found to vary positively with the two income variables. Age-specific unemployment did not prove to be either strong or significant in its influence on the rates of crime. Ehrlich noted that the low explanatory power exhibited by the unemployment variable might be explained by the fact that "the effect of variations in the true probability of involuntary unemployment is impacted in the effect of income inequality," or that unemployment and Ehrlich's variable for legiti-

mate income are collinear, and some of the explanatory power for this latter variable includes the effect of unemployment.

Ehrlich's economic model of crime has been adopted by a number of economists in replication studies using other cross-sectional samples, or emphasizing other segments of the population. In general, variables representing inequality of income or social inequality usually proved to be quite strong and significant, whereas the results for employment are similar to Ehrlich's. Sjoquist (1973) does provide an example where use of the unemployment rate, in his study across 53 municipalities using 1968 data, provided significant positive results for property crime. Pogue (1975), using three separate cross-sectional samples of SMSAs, reported unemployment as having little systematic impact on crime rates, "although variables that are correlated with unemployment rates (income, percent poor, percent white, percent youth) do have an effect." On the other hand, such studies as Swimmer (1974a, 1974b), Thaler (1975), Land and Felson (1976), Forst (1976), and Bartel's recent study (1979) for women, have shown weak results for the unemployment rate, sometimes to the point where the unemployment rate is removed from further consideration in the final empirical investigation. The major point of theoretical interest for the bulk of these economic models of crime studies is the effectiveness of deterrent variables, such as police expenditures or the incarceration rate, on rates of crime.

The primary variables of interest in the "supply of offenses" portions of these studies are the various income and inequality measures, with the unemployment rate not included in the original theoretical model. Critics of the economic model of crime, while emphasizing the theoretical ambiguity of the model's restricted behavioral approach, have also pointed out that the use of median income as proxy of returns to illegal market activity and income inequality as a proxy for returns to legal market activity may not be justified.

A number of cross-sectional studies, not utilizing the Becker/Ehrlich economic model, have found significant and positive results for the unemployment rate on rates of crime. Singell (1967) in his cross-sectional analysis of 441 Detroit census subtract communities, found unemployment to be a powerful predictor of juvenile delinquency, with elasticity estimates generally greater than one at various levels of employment. Allison (1972) studied Chicago area communities with populations over 25,000. Utilizing stepwise regression technique, he found unemployment strongly correlated with the crime rate of the community, "accounting for 57 percent of the variance," the next most powerful explanatory variable being the proportion of males in the population. Bechdolt (1975) in his analysis of 222 Los Angeles 1960 Census tracts and 19 1970 downtown Chicago police precincts found a strong and significant effect for unemployment on both property and violent crime, given crowding and population density. Bechdolt concludes, "it does not matter how high or low the income of an area is in determining the rate of property crimes; what matters is the rate of "unemployment."

The cross-sectional studies of Fleisher (1966a, 1966b), using data from 74 Chicago communities for 1958–61 and 101 American cities with a population over 25,000, provide strong evidence for a posi-

tive relation between the unemployment rate and delinquency rates and mixed results for an income inequality variable. Finally, the monumental study of factors influencing urban crime performed by Hoch (1973), using a wide array of data from 136 SMSAs in 1960 and 137 SMSAs in 1970 to investigate the influence of a large number of demographic variables on the seven major UCR indexed crimes, reported a significant association between unemployment rates and increased crime rates of burglary and assault for both 1960 and 1970, and larceny and robbery in 1970. Hoch reported that the significance of the unemployment rate association with the rate of burglary in 1970 was "the highest attained in all of the analyses."

In conclusion, it should be noted that there have been a number of cross-sectional studies that have not emphasized the economic model of crime, that have not found a strong significant relation between the unemployment rate and the various rates of crime. This result appears in studies that have stressed relative income inequality of age and race as primary explanatory variables. Rather than clarifying the relationship between economic factors and the rate of crime, cross-sectional studies have often muddied the issue, since so many of these factors are intercorrelated with each other. Finally, cross-sectional archival studies, because of the static nature of their data, may not be appropriate in determining the dynamic influence of economic change on social deviance or the rate of criminal activity.

Conclusions

Any summary of the literature on economic change and the rate of criminal activity shows that the archival study evidence is at best inconclusive. In the area of the influence of the unemployment rate, Long and Witte (1981) state:

> The findings of the studies using aggregate data imply that there is a positive, although generally insignificant relationship between the level of unemployment and criminal activity.

A far harsher conclusion was reached by mathematical criminologist, Fox (1978):

> The absence of an impact of the unemployment rate on the rate of crime appears at this time to be unequivocal.

Fox advocates a demographic model of crime, modified by consideration of the effectiveness of deterrence measures and income distribution variables. In fact, such powerful non-economic explanatory variables as the proportions of the population that are nonwhite or young are of course also correlated with such economic factors as unemployment, low income, and low relative income. To this intercorrelation problem must be added all of the other inherent empirical problems involved in using archival evidence to relate economic change to criminal activity. A pointed summary is given by Braithwaite (1979):

> Studies of the economic cycle and crime must confront major methodological problems. Definitions of crime categories often change over time, as do levels of police surveillance and the punitiveness of the ideologies prevalent in criminal-justice systems . . . . There are also questions about the validity of economic statistics, about

which major historical variables to control for, and about the time lag to be allowed before changing economic conditions are presumed to have an impact on crime.

Despite the empirical problems noted above, it seems that the case for relative income and social inequality having a positive impact on rates of property crime is probably the strongest (although not the most numerous) presented in the archival study literature. But questions about how, and even in what direction, the major economic change variables—unemployment, income change, or inflation—influence relative income inequality, and thus crime, remain unanswered.

IV. THE SURVEY EVIDENCE ON ECONOMIC CHANGE, PHYSICAL AND MENTAL ILLNESS AND CRIMINAL BEHAVIOR

Background

In this chapter, we will review the findings of surveys, the types of studies which rely on answers to questions asked of selected samples of individuals. We will discuss briefly some national surveys which continue to be conducted on a regular basis, but we will concentrate on six studies which relate mental and/or physical illness to economic change and one which explores the connections between criminal behavior and economic change. We will conclude by discussing where the weight of the evidence lies and whether social causation or social selection is supported and whether provocation or uncovering seems the more plausible explanation for the observations provided by survey data.

Because the types of data which can be collected through surveys of scientifically sampled groups of individuals are so various, the survey evidence is more varied than the archival evidence which is restricted to the information gathered for official records. For example, mood changes and less severe symptoms can be assessed, something not possible in archival studies.

The cross-sectional surveys relating economic conditions to health status and behavior confirm what archival studies have revealed. There is a marked inverse relation between socioeconomic status and mental illness, physical ailments and behavioral disorder. In other words, the lower the status, the greater the likelihood of illness and deviant behavior. Cross-sectional surveys have no advantage in this respect over large-scale archival data. Although they may measure symptoms or behavioral manifestations rather than institutionalization, they cannot break the conceptual impasse by specifying the direction of causality. Longitudinal survey studies, tracing the experiences and behavior of individuals over a period of time, hold the promise of specifying the direction of causality and suggesting mechanisms through which economic change is translated into personal distress. We will focus on longitudinal studies in this chapter.

There are no national longitudinal surveys which study economic change and mental or physical illness or criminal behavior. There are studies which examine one or another of these elements, but they do not explore the possible connections among them. Several large-scale national longitudinal surveys do touch on these connections, such as the National Longitudinal Survey and the Panel Study on Income Dynamics.

From these data, information of great value about labor market experiences and income gathering patterns of families has been gathered. However, little if any information on mental or physical health has been gathered in these surveys. There is one significant

exception. In the 1977 analysis of the National Longitudinal Survey, it was found that many of the unemployed middle-aged men perceived themselves as having decreased power over their personal circumstances. This finding, as measured by a standard set of questions scored on whether the respondent felt that control over situations was internal or external, is evidence that some negative changes take place subsequent to unemployment. We will return to these observations later. In a national study composed of one large-overall population survey, and a follow-up survey of a smaller group of unemployed respondents, Schlozman and Verba (1979) note that respondents reported changes over the unemployment episode. These changes were all negative: insomnia, headaches, increased drinking, and increased smoking. While such changes may be percursors of more serious problems, no further evidence is available. Still, the national scope of this study removes any concern about whether such responses are simply local.

Methodological Considerations

As we review the important regional and plant closing surveys, several methodological points require attention. There are basically two types of longitudinal surveys, retrospective and prospective. Most unemployment studies are retrospective; unemployment has already occurred and individuals in that status are surveyed. Unemployment studies often do not contain control groups because selection of control groups can be very difficult when the initial criterion has been unemployed status. Several of the studies we review here do not have control groups and therefore can only measure intragroup differences in responses to unemployment. Prospective studies are relatively rare, for they require that the researcher expects termination to occur but that the workers to be terminated do not expect layoff or are not yet terminated. Still, prospective studies, especially with control groups, are obviously methodologically superior and have potential for settling theoretical debates.

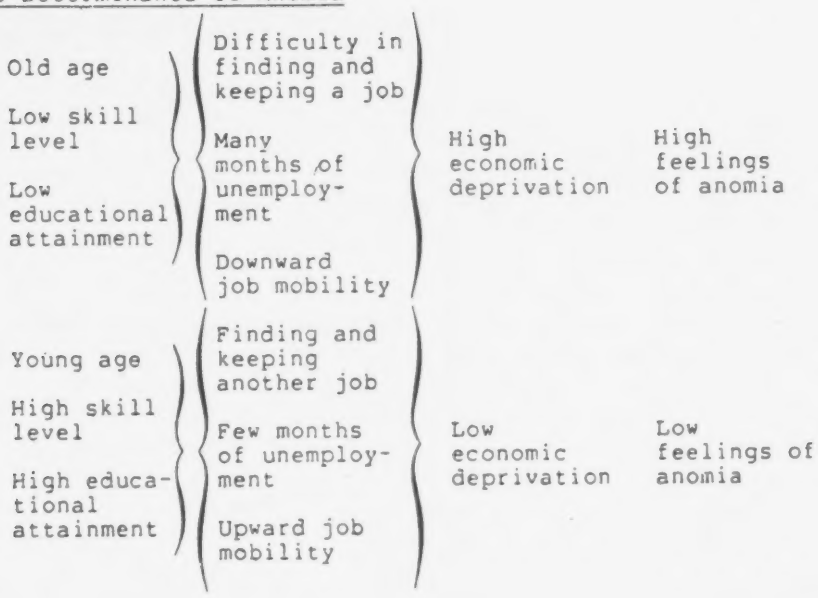
Other methodological considerations in unemployment research include concerns about the type of unemployment encountered and whether a specific sample can confirm or invalidate the social causation or social selection hypothesis. Because this debate has been so critical in the research area, many researchers have turned to the industrial plant closing as a source of a sample. The normal plant closing abolishes jobs of all individuals in the establishment and provides the researchers with individuals who cannot be said to have been selected for unemployment based on physical or mental health characteristics. These are generally people who have had a long, productive attachment to the labor force and the assumption is that poor mental and physical health which occurs subsequent to job loss can be traced to that job loss. While it is true that there are pre-existing conditions among those displaced by plant closings, those can usually be identified and controlled as the study proceeds.

Three Longitudinal Plant Closing Studies

The Packard Study

Three plant closing studies have been selected for review here. The first study, by Aiken, Ferman, and Sheppard (1968) of the terminated workers at the Packard Motor Car Company in 1956, is the first to assess mental health. The method used was a five-item morale scale which did not elicit great detail but which served to differentiate those in distress from those whose termination was not so difficult. This study has been criticized because the independent economic variable is an index of relative economic deprivation, a subjective rating of a condition rather than a specific discrete event. From another perspective, this confounding of variables, the economic reality plus the perception of its personal significance as reported by respondents, may be a strength of the study as we will note later. Two major clusters of laid-off Packard workers appeared after the data analysis. One group, characterized by youth, high skills and comparatively high educational attainment, who reported little feeling of economic deprivation, also had low feelings of anomie. This group also had better outcomes in terms of finding and keeping new jobs; they had fewer months of unemployment. They often experienced upward job mobility after the plant closing. In contrast the other cluster of Packard workers was older, with lower skill levels and lower educational attainment and high perceived levels of economic deprivation and greater feelings of anomie than the other group. Their labor market outcomes varied as well, since they had greater difficulty finding and keeping a job, and they experienced more months of unemployment and most often had downward job mobility when they did become reemployed after the shutdown. The linkages were diagrammed as follows:

The Determinants of Anomia



In summary, Aiken, Ferman, and Sheppard contend that background variables, such as age, predict labor market outcomes. Those labor market outcomes are related to economic deprivation (duration of unemployment leading to hardship). Finally, economic deprivation is a predictor of attitudinal and behavioral indicators of poor mental health. Aiken, Ferman, and Sheppard also point to money as the facilitator of those social contacts which can provide support during unemployment, and thus describe a situation in which anomie is specific to individuals without resources. This study did have a control group, drawn from other members of the United Automobile Workers in Detroit who had been studied in a voting survey in 1954. Unfortunately, while data were available on voting patterns, a set of variables also assessed in the Packard sample, no mental health questions had been asked in the survey of the non-Packard control group. This study comes down squarely in favor of a social causation argument of a specifically Durkheimian type which emphasizes downward social and occupational mobility. The critical intervening variable identified by this study is actual financial hardship which in turn has an important effect upon the individual's social links. This study was carried out in Michigan during a period when joblessness was at a post-war high not matched until very recently. This variable was not assessed separately but shows up in the labor market outcomes experienced by the displaced workers.

A Prospective Plant Closing Study

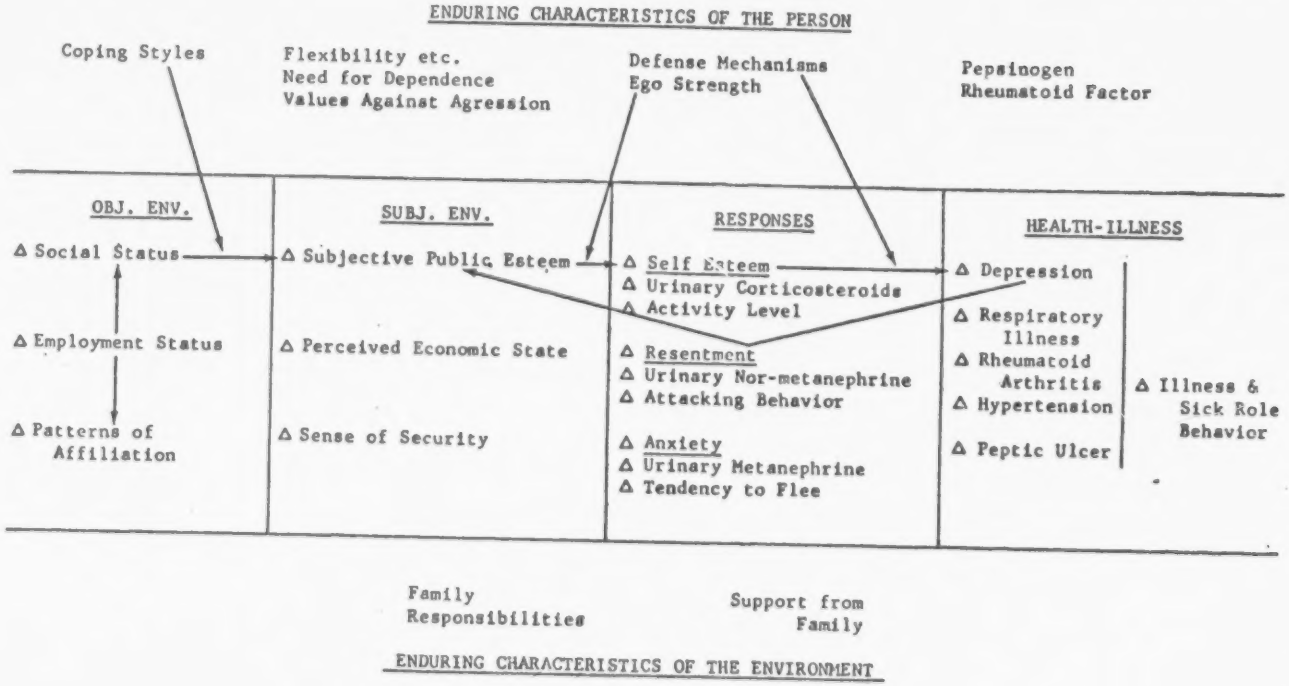
The next major plant closing study, the influential study by Sidney Cobb and Stanislav Kasl, yielded much important information which has been published in many journals, books, and reports (1968; 1969; 1970; 1975; 1977; 1978; 1979). We depend here upon the final report (1977), some work on social support by Cobb, Kasl, and

Gore (1975), and an article by Kasl and Cobb (1979). The study sample consisted of 100 men whose jobs were terminated in two manufacturing plants, one in a rural setting and the other in a city. There were also 74 controls selected from four other plants. These individuals were followed from before the plant closed until 24 months after the shutdown. The sample consisted of men, 35–60 years of age, who were married and who had an average of 18 years of seniority in the place of employment. They experienced an average of 15 weeks of unemployment and reported that they had had, on average, 2.9 changes in employment since termination.

The interviews and other tests were conducted at six-month intervals by specially trained public health nurses. A variety of measures and tests were used. The interviews held with respondents included blood and urine sample collection, blood pressure readings, pulse rates, height and weight, and a structured interview schedule which included a group of diverse scales. Most, if not all, of these scales are standard measures used by psychologists. In the Cobb and Kasl study, a series of such measures were used, for example, the Crowne-Marlowe test in which individuals agree or disagree with a series of statements about their social relations. Items such as how courteous individuals are, how they dress, whether they feel irritated, and how frequently they attempt to get revenge are included. This scale also provides an internal validity check to assess the consistency of responses within a questionnaire. The major variables to be studied are shown in the following diagram which was used by the study group as they began analysis of the data. It is important to note that this group adopted the Index of Relative Economic Deprivation from the Packard Study.

Figure 2

A Diagramatic Presentation of Selected Major Variables from the Study of People Changing Jobs
Reproduced with permission from the American Journal of Public Health Volume 56 (1966).



The outcomes of this major study appear to differ from the Aiken, Ferman, and Sheppard study. Several phases were identified in the study, and the most difficult period was Anticipation, the time between the announcement and the closing. This was followed by job loss, a time at which some relaxation was observed. The periods measured thereafter seemed to show substantial readjustment. With respect to the mental health variables, depression, low self-esteem, anomie, anxiety, psychophysical symptoms, insomnia, anger, resentment and suspicion, there appeared to be no major or enduring effects. As the researchers noted:

> The mental health impact of job loss and unemployment appears to be a limited one, both in terms of magnitude and in terms of duration.

Other important findings were that the lifetime earnings loss to men who were terminated in the period of high employment was relatively small. The numbers were not sufficiently large for results to be statistically significant but it appeared that diabetes, peptic ulcers, and gout might appear in a larger sample. There was an excess of peptic ulcer not only among terminated workers but also among their wives. An excess of swollen joints and hypertension was also observed. Most of the physical complaints rose sharply during the anticipation phase and declined thereafter.

When negative outcomes for the terminees in the Cobb and Kasl study were identified, such outcomes could be ascribed to the unemployment experienced. To some small extent, the social causation argument is supported by Kasl and Cobb. They identify low previous job satisfaction and relatively insignificant levels of economic deprivation as major reasons why the closing did not result in more negative outcomes. Social support was another major reason advanced for the relatively positive results especially for those workers in the rural setting. In that case, the closing did not rupture longstanding patterns of association as the closing in the urban area did. Moreover, the community, family, and friends knew about the closing and were helpful. Self-blame was at a minimum in this study as well.

The striking difference between this study and the Packard study was in the area of relative economic deprivation which is related to duration of unemployment. The average jobless period for the Cobb and Kasl Study was 15 weeks, while the Aiken, Ferman, and Sheppard workers experienced more than 10 months of unemployment. Nearly all the Cobb and Kasl respondents were back at work before the first post-termination interview was held. Moreover, the new jobs they held were similar in pay and status to their old jobs. The period during which Baker and Dawson plants closed was characterized by extremely high levels of employment and was one of the most prosperous periods in American history. Consequently, the Packard study sub-hypothesis, that anomie occurs because of economic deprivation related to much-delayed and poor labor force readjustment, was not tested at all.

A final note about the Cobb and Kasl study is necessary. This research also yielded a book in which cases studies of workers from one of the plants, Baker, were reported. In that book, *Termination* by Alfred Slote, the oral history shows a picture different from the

statistically significant findings reported in the structured study. Cobb and Kasl's final report tackles this discontinuity directly:

> In the psychological sphere the personal anguish experienced by the men and their families does not seem adequately documented by the statistics of deprivation and change in affective state. Those of us who visited these men in their homes feel that what we saw is somehow better represented in Alfred Slote's book, *Termination*. This is not saying that effects in this area were not observed, it is merely that the numbers don't seem commensurate with the very real suffering that we observed. Two things probably account for this. First, the measurement techniques for subjective states are imperfect; and second, the adaptive capacities of man are such as to reduce the effects are striking (sic). Indeed, in some men they may have been so transitory as to have been missed.

Two additional possibilities to account for the difference between findings in the case study and the survey exist. While the possibility of outright deception on the part of respondents is actually lessened in a case study which takes place in natural settings compared with the formal, brief meetings used in most surveys, the sympathetic investigator can introduce a bias in many ways. These case study interviews also took place, for many respondents, before reemployment and, as several studies show, recovery from depression and anxiety after reemployment is relatively rapid. This additional information about the Cobb and Kasl study should alert us to the fact that considerable psychic activity takes place after termination and, depending upon what occurs in that period, little damage may be done or enduring mental or physical problems can develop.

The Youngstown Sheet and Tube Study

A third plant closing study to be added to this review is the study of the steelworkers permanently displaced when the Campbell Works of Youngstown Sheet and Tube in Youngstown, Ohio shut down in 1977. Terry Buss and F. Stevens Redburn (1981) developed a two-year longitudinal study of 284 of these displaced steelworkers, 220 of their spouses and a control group of 84 individuals who were still employed autoworkers. Mental health status was determined using scales similar to those normally employed to elicit agreement or disagreement with a series of significant statements about behaviors or internal states. Items about which respondents were queried could be analyzed and placed within the following categories—physical weakness, health problems, alcohol use, drug use, family conflict, aggression, anxiety, avoidance, immobility, helplessness, suspiciousness, victimization, and depression.

The steelworkers who found employment rapidly and those who retired had relatively positive outcomes, while those who remained unemployed had consistently high levels of depression, anxiety, aggression, victimization, and alcohol use. However, the control group, the local autoworkers, showed on average very little difference from the average mean score for all steelworkers. Contrasts were sharp between reemployed and persistently unemployed steelworkers. Buss and Redburn make several comments about their findings. First, it should be noted that the attrition in the sample was severe from the first wave to the second, from 273 steelworkers to 150, from 125 spouses to 113 spouses. It is possible that considerable distortion could result from such attrition with those seriously depressed and isolated choosing not to participate.

But, presuming that the generally positive outcomes for the steelworkers are in fact valid, there are intervening variables which are influential. About 95 per cent of the steelworkers in the sample were either reemployed and were eligible and had accepted retirement. Further, steelworkers are well-paid and with the unemployment benefits, Supplemental Unemployment Benefits, and other assistance, any type of economic deprivation would have occurred later than the period of the longitudinal study. Steelworkers are accustomed to layoff. Not that they are used to something as catastrophic as the closing of the Campbell Works, but layoffs are events with which steelworkers have coped before. The employment picture in Youngstown from 1977 through 1979 was quite good. The Lordstown facility of General Motors was hiring and other steel producers were doing quite well indeed and demand was brisk, particularly for skilled workers. As a result, virtually all unemployed steelworkers who wished found new jobs, as might be expected, since the local economy actually showed an expansion in jobs in the Youngstown SMSA through the period of this study despite the closing of the Campbell Works.

Two particularly important points surface. Relative economic deprivation was not a significant factor in Youngstown and only those with prolonged unemployment showed negative outcomes of any kind. Social support is naturally high in Youngstown, historically a community with a strong sense of solidarity and community attachment. Family ties, neighborhood ties, and associations of all types flourish in Youngstown and continue to do so, partly in response to the needs created over the past century by the cyclical employment pattern of the steel mills. While the story of the Campbell Works may not have been too bleak, later shutdowns, such as Brier Hill and Warren, occurred when employment was contracting in the Youngstown area. The Buss and Reburn study, like Cobb and Kasl's, but unlike Ferman's, did not actually capture the potentially serious problems associated with plant shutdowns in areas of high unemployment.

Longitudinal Survey Studies of Unemployment

The Detroit Unemployment Study

We now move to a series of longitudinal surveys which are not associated with plant closings. The first of these research projects (Alden, Ferman, and Gore n.d.) had several major elements including a case study section which will be discussed in detail in Chapter V. Participants in that case study were drawn from a panel of 446 individuals who were unemployed in Detroit, Michigan. Unfortunately, this group of unemployed individuals was not a random sample and the findings of the survey cannot be generalized. Five interviews, two home visits, and three phone interviews, were administered using structured interview schedules which elicited work histories, measures of economic deprivation, measures of social support, and a variety of mental health measures. A good portion of the study was carried out during the recession of 1974–75 and during the recovery which followed. However, two major problems restrict the usefulness of the conclusions reached in this study. First, no control group was used so only intragroup differ-

ences were measured. Second, many respondents had already been unemployed for a considerable period before they became part of the study sample and therefore no reliable information about early patterns of stress and readjustment can be expected from the study. Generally, the predicted relationships were found. Those with high levels of economic deprivation suffered the worst mental health consequences. Those consequences were mediated by social support. Age and poor previous mental health status were good predictors of post-termination mental illness.

This study clearly supports a social causation and provocation argument and continues in the tradition of Ferman and his colleagues since it emphasizes anomie. More than that, it emphasizes that anomie and poor mental health outcomes result from unemployment directly and indirectly as economic deprivation induces more stress and reduces access to those social support systems which can mediate stress. These intervening variables continue to be important.

The Survey Studies of Catalano and Dooley

An important set of studies, already considered in part in the preceding chapter, are the archival time series-longitudinal survey studies carried out by Ralph Catalano and David Dooley. Catalano and Dooley specialize in linked studies, research which attempts to connect findings from archival analysis with survey results. This research adopts a linking strategy in order to make other substantive linkages such as connections between macroeconomic change and life events, for example, or between macroeconomic change and depressed mood. In an effort to link all four phenomena, large-scale economic change, life events, individual symptoms, and large-scale indicators of individual pathologies with each other, Catalano and Dooley have undertaken a continuing series of studies designed with particular attention to indicators.

In the Kansas City studies which appeared in 1979 and thereafter, Catalano and Dooley depended for their survey upon data already collected in Kansas City in 1971–1973. The method of collecting these data has been called a "powerful cross-lagged design," and it presents several curious features. In Kansas City, interviews with individuals chosen in weekly probability samples were conducted to measure life events and moods, and a total of 1173 individuals were surveyed. The problem, of course, is that a design such as this works best when the independent variable (economic change) actually varies. When this does not occur, the survey results, even when correlated with archival data about mental hospitalization, do not have much longitudinal power, although if great macroeconomic variation had occurred, this objection would not arise. But, as we have pointed out, this research area is not subject to experiment. A period longer than the 16 months used in that 1971–73 epidemiological study would have been preferable, and it should be noted that this cross-lagged design is often used to good effect over longer periods of time.

Catalano and Dooley had, until recently, concentrated upon urban areas where surveys had been done by others and upon which they could do secondary analysis. More recently, a useful rural survey in Washington County, Maryland, near the West Vir-

ginia border, was used for secondary analysis. For the first 13 months, 33 households were drawn weekly, and thereafter 100 householders were drawn monthly for a total of 2,672 respondents. Unfortunately, two versions of the survey instrument were used and little detail about these variations is available. The time period for this study is obviously better than the Kansas City period, since it involves 31 months rather than 16 months. Once again, the objective was to identify depressed moods and life events and to correlate these with economic changes. No relationships were shown to exist. Neither did life events correlate with absolute change in the basic sector work force. In one of the Kansas City studies, Catalano and Dooley had found that low-income respondents were more reactive to economic change than middle-income respondents, a finding which could support a social selection argument. No such finding appeared in Washington County.

The general interpretation of these findings involves a kind of reversal of the type of argument Eliot Sclar presents. A rural area such as western Maryland exhibits social cohesion and high levels of social support and demonstrates little response to economic change. In other words, this is not an anomic situation. However, there is, in that particular time period, comparatively little economic change to which either a community or individuals must respond or from which social disintegration can result. Once again, a theoretical approach cannot really be tested due to circumstances outside the investigators' control.

The final evaluation of the work of Catalano and Dooley cannot be given, for as they themselves point out, many replications should be done and new designs must be developed to test intervening variables. Generally, their replication of the findings linking macroeconomic change and aggregate indicators of behavioral disorder are important and valuable. Their results linking symptoms and life events are an important step forward as well. But, to date, their failure to establish more linkages or to demonstrate convincingly that those linkages do not exist, creates a situation in which their uncovering hypothesis, especially for prime age males, must be considered, as the Scottish verdict has it "not proven." However, their work is, for us, one more piece of evidence that the connection between large-scale economic change and individual pathology is both real and infinitely more complex than the research community has realized until recently.

The Work and Unemployment Project

The Work and Unemployment Project (Liem and Liem 1979) is a panel study of 40 blue-collar workers and 40 white-collar workers and families following the involuntary loss of job by the husband. Some job loss was due to layoffs while others were due to plant closings. Four intensive interviews were conducted with the workers and their families over one year, and the panel families were paired with a control family in which the father was employed. Matching was done using characteristics such as occupational status, work status of wife, family life-cycle stage, and locality. Job loss of unemployed husbands, in this sample was strongly associated with higher levels of psychiatric symptoms than experienced by the control husbands and this difference was particularly marked

during months 1 through 4 following job loss. Reemployment was obviously an excellent remedy since the symptoms dropped after the new job to levels which were, on average, lower than those exhibited by the control group. The focus of this study upon wives was similar to that reported in the Youngstown Study, but the results are more interesting since the frequency of interviewing permits observations of changes more infrequent interviews could not capture. It was noticed, for example, that wives lagged behind their unemployed husbands in displaying symptoms, but did, by the second interview, exhibit symptoms of anxiety, depression, phobia, and sensitivity about family relationships. Wives of reemployed workers were, in contrast, indistinguishable from wives in the control group. Although little emphasis was placed upon resources in this study, a similar pattern to that revealed in Ferman's study shows up; that is, a close relationship between symptoms and duration of unemployment. Particular emphasis is placed upon the fact that this research was conducted during a serious recession in a severely affected area. Liem and Liem feel that even this preliminary analysis shows strong support for the social causation argument.

The Hartford Project

Another interesting study in progress should be mentioned briefly, although, unlike other studies analyzed, it is not a longitudinal survey. However, the Hartford Project (Rayman and Bluestone 1982) still in the early stages of analysis, has a particularly interesting and potentially productive design. First, the aircraft industry itself was studied, including its segmentation into prime and subcontractor firms, the union and non-union shops, and the internal labor market structure. A contextual analysis of the several firms comprising the aircraft industry in Hartford was conducted. Next a comprehensive archival analysis of the total labor force in this industry in Hartford was conducted using the Longitudinal Employer-Employee Data (LEED) file. Analysis showed that this industry employs an aging group of workers subject to boom and bust cycles. One fourth of the jobs in the area are in manufacturing and about 87 percent of these jobs are in the aircraft industry. Clearly, a bad time in the aircraft industry quickly becomes a bad time in the local area. The third stage involved a mailed survey sent to 206 respondents, carefully selected using the LEED file. In a fourth phase, personal interviews were conducted with 80 workers, a subsample from the survey sample. This study, since it depends upon respondents' self-reports, has some of the disadvantages of any retrospective study. Still, it is significant that the majority of respondents who had experienced job loss in this particularly vulnerable industry in a vulnerable area reported physical and emotional problems and financial difficulties. Hypertension, alcoholism, increased smoking, neurasthenia, insomnia, and anxiety were the most prevalent symptoms. Middle-aged heads of household with young dependents were the most seriously affected group. The researchers point to the fact that unemployment in the aircraft industry in Hartford happened in a particular context, one in which the possibility of reemployment in the primary sector was very remote until the aircraft industry recovered. This study supports the social causation and provocation model and as analysis pro-

ceeds further will, no doubt, reveal a variety of other important findings. What is particularly important is that this new generation of research which addresses those issues brought forcibly to the attention of the research community by Brenner, tend toward complex designs, multidimensional strategy, and interdisciplinary approaches.

Research Findings From the Panel Study on Income Dynamics

Before we conclude this section on surveys concerned with economic change and physical and mental health, and move on to one study of economic change and crime, we wish to point to a particularly elegant and intriguing study which confirms older hypotheses and may provide yet another set of crucial variables. Using data from the Panel Study on Income Dynamics, a national panel survey of 5,000 American families, Cohn (1978) drew subsamples from the first five annual waves (1968–72) and was able to isolate individuals employed in 1968 and unemployed subsequently. A comparison group of individuals employed in both waves was then drawn to serve as control group. This strategy permitted the use of a research design which is known as "nonequivalent control group design." Cohn obviously was forced to use questions already asked on that survey and had to restrict his hypotheses to those testable through the survey's findings about levels of self-satisfaction. We present the hypothesized set of relationships below in a figure taken from Cohn's article (1979). The findings were that becoming unemployed does lead to greater self-dissatisfaction. These feelings are exacerbated by change in family role performance and the unavailability of previous roles and achievements. These findings reinforce all the "conventional wisdom" about unemployment-related problems which case studies suggest but cannot confirm statistically. Even more important, the lack of an external locus of cause to which to attribute job loss (for example, when the local level of unemployment is not particularly high) makes these feelings more pronounced. For the first time, a wide variety of effects, including the presence and absence of self-blame as a factor in post-termination distress surfaces as an important mediating variable in a study which is national in scope and for which the findings can be generalized.

Figure 3

Theoretical Model of the Effect of Employment Status Change on Self-Attitudes.

(Dotted lines indicate unmeasured constructs; C_{es} indicates the employment status component of self-concept.)

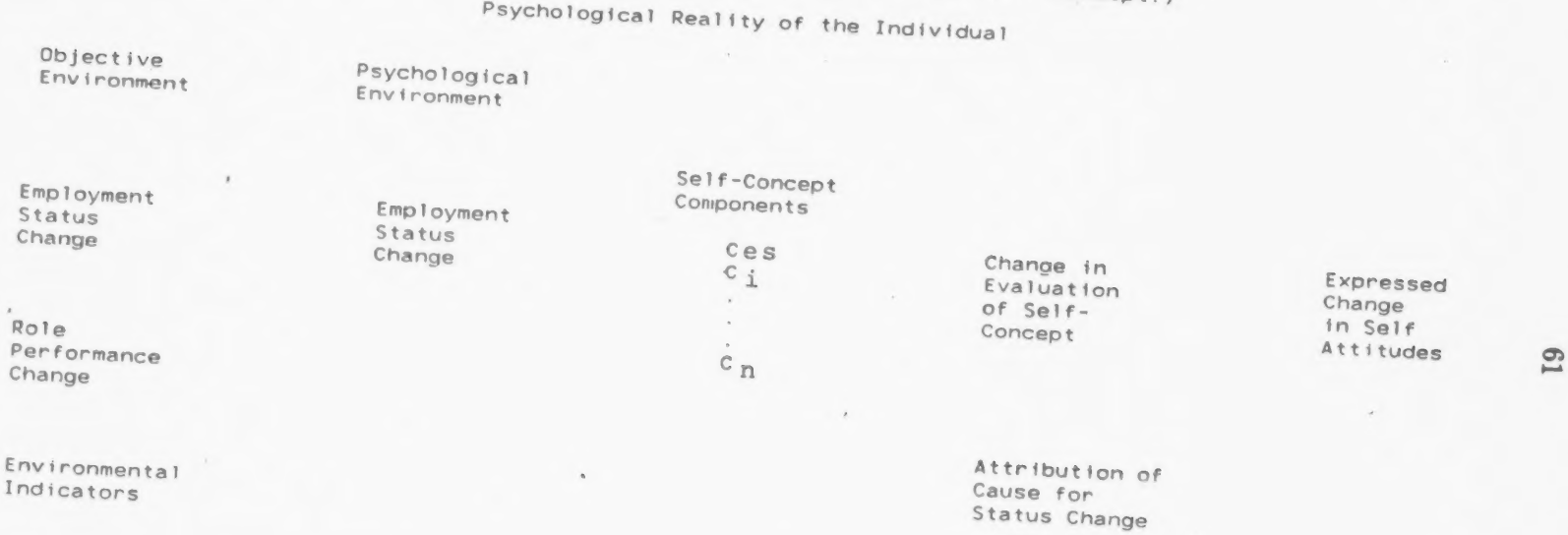


Figure copied from Richard Cohn, "The Effect of Employment Status Change on Self-Attitudes," Social Psychology, Vol. 41, No. 2, pp. 81-93.

Economic Change and Social Deviance (Crime): Survey Evidence

The available survey evidence linking economic change and criminal activity is almost entirely comprised of results from studies involving ex-offenders or state prison inmates. Most of these studies are evaluations of work-release or income support programs instituted for either juvenile offenders or released state prisoners. Although the quality of the programmatic literature is generally excellent, their exclusive use of such a restricted population (committed criminals) may preclude the generalization of their results to the wider population. This is not the fault of the researchers themselves, for their primary interest has usually been in the effect of varying economic conditions or opportunity upon recidivism of convicted criminals.

An example of the use of the survey technique in order to investigate the possible relation between economic factors and the recidivism rate of released inmates is Witte (1980). The author collected data on the post-release activities of 641 North Carolina convicts for an average of 37 months after their release, using officially reported criminal activity for her dependent variable. Witte then tested the economic model of crime using both survey and record-collected data on independent variables measuring job opportunity and quality, deterrence, and personal background or tastes. Surprisingly, the number of months until the first job was acquired proved to be negatively related to criminal activity, although this finding was statistically insignificant. Wage level, on the other hand, proved to be positively related to low levels of criminal activity. On the basis of her own findings, as well as results from other individual studies, Witte has hypothesized that it is not the availability of employment that is influential in the criminal's decision to engage in illegal activities, but the quality of available employment, especially for nonserious income offenders. Thus, an inverse relationship between the unemployment period and criminal activity may, in Witte's North Carolina survey, reflect a positive relationship between a commitment to finding quality employment and reduced illegal activities. Cyclical swings in unemployment may have an effect upon the illegal activities of criminals not directly through the reduction of all employment, per se, but through the reduction of opportunity for desirable employment providing a viable income. Given a choice between unsatisfactory employment in the secondary labor market, and the quick though risky return from illegal activities, criminals may very well opt for the latter. This may be especially true for drug users whose income needs are great.

Excellent reviews of individual studies relating crime and employment are provided by Long and Witte (1981), Witte (1979), and Thompson, Sviridoff, and McElroy (1981). As we noted above, the individual studies relating employment and criminal activity all make use of convicted, and usually formerly imprisoned, criminals. Witte has noted that the majority of crimes are committed by those who have been jailed before. However, this fact does not lead to the conclusion that the type of criminal activity most responsive to the macroeconomic change is usually committed by such criminals. In

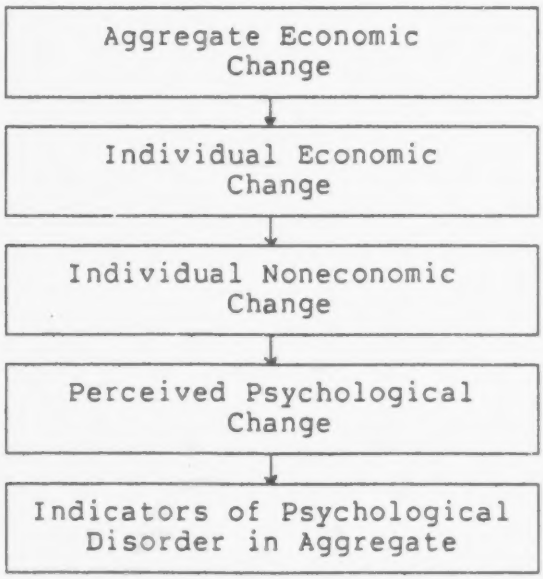
particular, limited population studies of ex-offenders have practically nothing to say about changes in social deviance for the new structurally unemployed in declining basic industries. Since it is almost impossible to generalize the results of ex-offender studies to the great majority of the population, or even a significant proportion of those now most experiencing the effects of economic change, their use in the understanding of how economic change may affect the incidence of social deviance of those outside of a certain committed criminal group is limited.

V. CASE STUDIES, CLINICAL STUDIES, AND ORAL HISTORIES

Background

The case study tradition elaborating the linkages between large scale economic change, experienced mostly as unemployment, and subsequent pathologies has historically concentrated upon personal and family stress. In the 1930's, several influential studies made their appearance and they have been fundamental to the development of the different provocation and social causation models which have already been discussed. Athough the early studies emphasized personal disorganization and marital problems, no specific psychological measures were used. More recent case studies which we will review often use standard measures of depression and other psychological symptoms. Early case studies did not focus on physical illness even indirectly but more recently, several such case studies have been published. One of the most important studies of life events and physical illness is described below. Finally, as in the earlier case studies, more recent research also fails to include case studies on crime behavior.

Hypothesized Relationships Between Economic Change and Indicators of Psychological Change



Ferman and Gardner (1979) have developed a simple model based on earlier case studies of unemployment and personal outcomes. The model is based on research nearly five decades old and it reflects the focus of those early case studies and their analysis of long-term unemployment and its effects upon families and individuals. This research strengthened the social causation and provocation arguments by providing nonquantitative evidence about each of the five steps shown in the model. The classic studies of three scholars, Bakke (1934), Angell (1936), and Komarovsky (1940) all reveal some adaptive coping strategies developed by individuals and families in the Great Depression, but the detailed cases provide pictures of depression, self-reported rather than clinically diagnosed. The social disruption and marital and family discord are closely associated with continued economic deprivation, a constant theme in these older case studies. As we approach seven recent case studies, keeping in mind the model outlined above, it is important to point to differences between the period which helped produce this model and the economic context in which more recent studies have been conducted. As Schlozman and Verba (1979) note, several arguments have recently been advanced pointing out differences between the context of the early case studies, the Great Depression, and the 1970's. These can be summarized briefly.

First, unemployment had a significantly longer duration in the 1930's compared with the 1970's and most catastrophic consequences of unemployment did not occur immediately. Second, many individuals in the 1970's are more or less "voluntarily unemployed" as compared with the 1930's when virtually all unemployed workers were involuntarily employed. Changing family patterns and changing labor force participation patterns in the 1970's provide many situations in which only one or only the secondary wage earner in a dual-worker family is unemployed, a contrast to the single-wage earner "traditional" family pattern of the 1930's. This transformation creates many situations in which unemployment is less financially difficult since one wage earner remains employed. Finally, income maintenance programs, primarily unemployment compensation, but including Supplemental Unemployment Benefits, severance pay, and other forms of union-negotiated, company-subsidized, or government programs ease financial hardship much more in the 1970's in contrast to the 1930's when few alternatives, chiefly local government and private charity, were available when savings were exhausted.

The availability of resources, either income maintenance programs and supplements of substantial personal savings, or both, may be a major reason why more recent case studies identify many individuals for whom the unemployment experience was not particularly difficult.

Characteristics and Findings of Selected Case Studies

The case studies we have chosen to discuss at length here range from series of interviews in which no quantitative data were developed and no structured instruments of any kind were used, to studies in which structured interview schedules designed to elicit information to distinguish between competing hypotheses were used, to

quasi-experiments such as Manuso (1977) reports. Some respondents were middle-class professionals with considerable financial resources and human capital, while others had little resources of any type. In some cases, evidence was adduced to support formulations drawn from other research areas. Some studies used relatively standard psychometric scales, while others relied on open-ended interviews. We will discuss the problems associated with these differences in the summary below.

Middle-Class Unemployment

Two studies of unemployed professional and technical workers, mostly scientists and engineers from the aerospace-defense-electronics industrial complex around Boston, Massachusetts, differ methodologically but offer interesting similarities and contrasts. In the first, Powell and Driscoll (1973) conducted open-ended interviews with 75 unemployed middle-class professionals to ascertain psychological changes. No structured interviews were used; no psychological tests were administered; the study is completely qualitative. The mean age of individuals in the sample was 41 years. The means for years of education and months of unemployment was 16 and 9.5 respectively.

The major observation resulting from this study was the identification phases through which unemployed individuals appeared to proceed. Distinct attitudinal and behavioral changes were associated with each phase. After a period of anticipation which Powell and Driscoll did not study, but about which they offer respondents' observations, the first stage discerned was a post-termination period of relaxation and relief. This short time, less than 1 month, was followed by the second stage, a period of concerted effort, characterized by a high level of job search activity and supportive relationships with spouse and family. Organized job search patterns were exhibited by those with most financial resources. After a period of unsuccessful job search, the third stage, a period of vacillation and doubt, ensued during which job search became less organized, interacting with increasing personal, family, and social disorganization. The third stage was followed by a fourth, a period of malaise and cynicism. Powell and Driscoll explain the changed and self-defeating methods of job search they observed as one strategy adopted to cushion the impact of rejection. Personal disorganization and social isolation became more pronounced in this phase, and job search patterns reflect loss of professional identity.

Powell and Driscoll's findings are provocative but raise more questions than they answer. Critical relationships are not explored, such as previous job satisfaction, while demographic data containing important background information are missing, as well. It is interesting to compare Powell and Driscoll's phases with those mentioned in Chapter IV from Cobb and Kasl. The in-depth interviewing identified several more stages than Cobb and Kasl, although it excludes anticipation which Powell and Driscoll did not observe directly. With that exception, there is considerable congruence between the phases observed in the two studies. In summary, it seems clear that macroeconomic change experienced as unemploy-

ment is translated into individual psychological change which surely appears to be negative.

Craig Little (1976) studied a similar group of unemployed technical and professional workers to investigate psychological changes, once again using a Professional Service Center in Massachusetts as a site. Little's sample was considerably larger, 100 individuals, and the study period was between three and four months. The study was designed to test two hypotheses about middle-class unemployment. One position, drawn in part from Bakke (1940) would argue that middle-class individuals would experience job loss even more keenly since the downward mobility from a higher position would be more disorganizing than for persons of lower occupational status.

A competing position would contend that middle-class persons have more resources available to them and consequently suffer less from the unemployment experience. The study, which depends upon structured interviews, revealed that 48 percent of the respondents (n=48) reported a relatively positive feeling about the layoff. Individuals in mid-career with low job satisfaction, and a relatively higher level of personal financial resources were more likely to view the job loss as an opportunity for deferred job change. It should be noted, however, that the unemployment rate for such workers nationally, at the time of this study, was 2.7 percent while the overall unemployment rate was 5.8 percent. The high resource-positive outcome hypothesis was supported by these findings. It is noted, however, that evidence of both financial deprivation and mental anguish was found in virtually every one of the 100 cases. This point serves to reconcile the difference in findings between Powell and Driscoll and Little.

A quasi-experiment developed at the Equitable Life Assurance Society (Manuso 1977) used Thematic Apperception Test (T.A.T.) pictures followed by an incomplete sentence test. This is a standard tool used by psychologists to identify depression, anxiety, and other symptoms. Individuals describe what the pictures represent to them, and interpretations of these answers, based on a standard method, are made. Manuso tested the treatment group of 16 individuals whose jobs were abolished, compared with a control group of 91 persons whose jobs had been changed with more responsibility. Job abolishment provoked depression primarily among those with a tested predisposition to depression. The controls who had increased job responsibility experienced increases in hypertension, gastrointestinal disorders, and anxiety. Group processes were found effective in countering depression in this study.

Blue-Collar Unemployment

Another investigation of depression was conducted by Landau, et al. (1980), reporting on data for laid-off blue-collar workers. While the study design was marred by a high refusal rate, it appears that no significant bias by age or sex was introduced by the refusals. While actual economic deprivation was not significantly associated with depression, perceived economic deprivation was. The measure of depression was the Zung Self-Rating Depression Scale, a standard scale widely used to measure depressed moods among psychiat-

ric patients. Forty percent of the respondents scored above 56 on the Zung Index, the mean score for a sample of male psychiatric outpatients diagnosed depressed, compared with 13 percent of the respondents in a normal population.

This finding is echoed by the three-year study of 40 unemployed workers in Saltville, Virginia, whose jobs were lost in a plant closing. Once again the ethnographic approach used here did not lead to the firm definition of a dependent variable such as depression or utilize a standard measure for the condition. On the basis of many interviews over a long period, Strange developed evidence to support the idea of separation or loss conjoined with the grieving cycle used in death and dying studies. These stages are: denial, anger, bargaining, depression, and acceptance. Once again, perceived psychological change, chiefly offered as self-reported negative feelings and changes in behavior and attitudes were reported and fitted into a pattern observed in other separation situations.

There is considerable congruence between the cycle noted by Strange and supported by his observations and the behavior noted by Powell and Driscoll. Quite apart from the possible bias introduced by the quasi-psychoanalytical approach used by Strange, the richness of detail in this study is due, in part, to the length of the interviews, their open-ended form, and to the long period during which the study was conducted. Familiar themes emerge in this study. While social support is an important mediating factor between the individual and unemployment-provoked problems, the anomic argument reappears as well. The closing of the plant in Saltville had "stripped the community of what had been its principal mechanism of social integration." A problem in this interpretation is the contradiction common in social-support-anomie arguments. If the community had in fact been stripped as Strange suggests, why does social support, provided by spouse, family, friends, and community appear as such a strong mediating factor? We will discuss this problem in the concluding section.

A Clinical Study of Stress and Coronary Disease

A striking contrast to the case studies and psychological clinical investigations and quasi-experiment is the study of stress factors and the risk of myocardial infarction of Thiel, Parker, and Bruce (1973). In a retrospective study, men who had suffered myocardial infarctions were compared with a control group of 50 healthy males, all from 40–60 years of age. Detailed questionnaires were developed and clinical investigations were continued for both groups. The findings were that the clustering of multiple psychological stresses and excessive habits, demonstrated in the majority of the patient study group, may contribute significantly to the early development of coronary heart disease in men. Anxiety, depression, sleep disturbances and stressful work situations were all present in the patient study group to a greater degree than in the control group. Statistically significant differences, $p > 0.05$, were noted with respect to higher incidence of divorce, loneliness, excessive working hours, nervousness, depression, anxiety, and sleep disturbances. Acknowledging that the clustering and significance of these multiple psychological factors in heart disease patients compared with

healthy subjects is striking. Thiel, Parker and Bruce note that retrospective studies of those having had serious illness present methodological difficulties. However, the performance of this research after the subjects' recovery was certain could have affected only a few of the factors—depression for example, but not others such as divorce. This study, one of a number of retrospective analyses of illness and antecedent life events which provoke negative feelings and adaptations, can, as we will discuss later, provide some linkage between the "perceived psychological change" and subsequent symptoms.

A Longitudinal Case Study

Ferman and Gardner (1979) present typologies based upon carefully structured interviews with a subsample of a group of unemployed Detroiters who had been included in a panel study described earlier. Depression, anxiety, and health problems were the dependent variables investigated. Since this study extended for four years, it was possible to synthesize six different types of "unemployment careers" and to relate these sets of experiences, e.g., prolonged unemployment, returned to former jobs, and in and out of work with different employers, with both economic deprivation and symptoms. It is important to note that the early processes identified by Powell and Driscoll and Strange were not captured in this study, although the processes occurring over several years and labor market experiences were identified. The patterns which emerged implicated economic deprivation as the most important explanatory variable, and social support, in this analysis, had little buffering effect. Stress is clearly assumed to be an important intervening variable, but the stress is situational and directly related to resource insufficiency. The study claims to stand squarely in the anomic tradition and identifies individuals subject to anomie and subsequent physical and mental illness as those whose labor market experiences over time lead to much reduced social status, occupational status, and, most important, financial deprivation.

Case Study Theories and Implications

The disparity among results reported in these seven case studies is provocative. Several themes run through these studies and serve to reconcile some of the findings. In Chapter IV, we noted that the case-study approach of Slote (1969) showed more negative unemployment related results than the rigorous study approach used by Cobb and Kaslo (1973) on the same population. And, as we noted early in this chapter, Powell and Driscoll's (1973) less rigorous analysis showed more negative results than Little's (1976) more rigorous study. The research showing more positive outcomes was conducted later in the unemployment experience than the negative-result studies. Since the unemployment rates prevailing locally or within the appropriate labor market were low, the negative feelings noted by Slote and Powell and Driscoll could have dissipated and failed to provoke negative enduring mental and physical health outcomes since respondents could perceive considerable opportunity for reemployment. Such a formulation suggests that there are important intervening variables early in the unemploy-

ment experience which may be influential in promoting or inhibiting a positive outcome for individuals. A second theme is the "repertoire of resources" possessed by the unemployed individuals. The blue-collar workers studied by Landau et al. (1980) and Ferman and Gardner (1979) stand in marked contrast to those studied by Little (1976), a group with human capital and financial assets; and the results are also strikingly different. Unemployment is not a factor in the Thiel, Parker and Bruce (1973) study, one of many such clinical studies, yet life events and the associated stress are associated with later illness. Indeed, many of these same life events and symptoms of depression and anxiety are shown to be associated with unemployment in both the early and later stages. Case studies, clinical studies, and oral histories suggest causality, although no firm connections are established. Instead, suggestive patterns are described, as those encountering economic deprivation fare worse. Those with youth, human capital, and resources on their side weather the experience well. The case studies also suggest that time is important since there are psychosocial processes which take time to develop.

The problems of methodology noted in these studies are not necessarily connected to the approach itself, as the careful in-depth interviews in Ferman and Gardner (1979) show. A careful design with clearly defined dependent variables carried out through ethnographic methods is needed early in the unemployment experience to offer a rigorous foundation for the suggested early post-unemployment phases. This is particularly critical since strategies chosen at this time, conditioned by background variables, under the presumed psychological pressure at this stage, can obviously determine the long-term psychological, physical, and social outcomes for individuals.

Case studies contribute a potentially useful set of variables to be tested in a model which relates economic change to physical and mental illness. First, in light of Ferman and Gardner's findings, future studies must consider as an important variable the individual's current status with respect to the labor market compared with his/her past status, that is to say, whether the individual has bumped or skidded in the labor market. Careful analysis of the experience directly after unemployment, tested through clinical measures, and then matched with behavior, such as job search and family interaction, would provide some evidence about the severity or non-severity of the immediate experience and the implications of choices made at that time for enduring outcomes. A major variable which must always be considered is the local rate of unemployment. Changing levels and types of social support must all be included.

Conclusions

In summary, the case studies presented here provide continuing support for a social causation argument and a provocation argument as well. The case studies of the Great Depression had influenced the debate in favor of these arguments but some questions arise since more recent case studies show less negative outcomes for unemployed individuals. Clearly the economic context in which unemployment is endured has changed. To the degree that the eco-

nomic environment deteriorates, on the large scale or even on the personal level, as individuals experience real hardship as benefits are exhausted, the similarity between Depression-era studies and contemporary research is increased. Because neither archival aggregate studies nor even large surveys can expose attitudinal changes and behavioral alterations over short periods of time, case studies remain enormously important as they provide evidence about phases of unemployment. Those phases, as they are understood more fully, will surely guide the development of more empirically based and highly specific lag periods to be used in time series analysis, and will guide the design and timing of interviews in survey studies. Therefore, case studies continue to be significant because of the data they provide and the contributions they make to the ongoing research effort. As yet, we have no coordinated research effort in which archival aggregate analysis, longitudinal surveys, and case studies have been conducted, a research strategy which would probably clarify many problems which are still puzzling.

29-272 O—84——6

VI. CONCLUSIONS

In this section, we will address four major points. First we will outline what is known about the connections between economic change and the pathologies we have discussed and we will present questions concerning those critical points about which too little is known. We will then discuss why theory is important and in the following section move on to a discussion of the social costs of unemployment. We will then conclude with a section in which we discuss which theories appear, at present, to be best supported by the available evidence which we have analyzed in this review.

Important Findings and Remaining Questions

—The suicide rate, particularly for prime age males, is significantly and positively correlated with cyclical unemployment.

—Increases in the mortality rate, particularly for prime age males 45–64, from cerebrovascular and cardiovascular disease, reaching a peak slightly more than a year after the unemployment peak, were observed in the Dayton, Ohio SMSA and match increases hypothesized by Brenner.

How long is the appropriate lag between job loss and, for example, serious cardiac problems? How do we know that?

—Certain types of property crime are positively related to economic downturns.

—The "absolute income gap variable," the difference between the income of an individual and the income of his reference group, is strongly related to property crime.

What really matters? That there is economic deprivation, independently defined, actually occurring? Or that people perceive that they are economically deprived in relative terms? What is the relationship between economic change and violent crime, particularly domestic violence?

—The unemployment rate has been found to be significantly positively associated with mental hospital admissions at an appropriate lag.

How influential is the "supply side" for institutionalization or care? Does it explain a major portion of changed hospitalization patterns as some assert? Or, as one study suggests, can this be controlled so that unemployment becomes the major explanatory variable?

How influential is the "demand side" for treatment or institutionalization?

Is it true that family systems no longer need or can support the infirm in hard times and institutionalize deviant family members under that pressure?

Is there a kind of "queue" for mental health outpatient treatment which serves prime age males first so as to return them to work? Is hospitalization a good measure of mental illness?

—The unemployment rate has been found to be positively correlated with imprisonment.

Is imprisonment a good measure of crime?

—A consistent pattern among nearly all studies of unemployed individuals is the self-reporting or diagnosis of some types of symptom. Most often subclinical, these symptoms include depressions, aggression, anxiety, insomnia, irritability, loss of self-esteem, and marital problems.

Since wives of unemployed steelworkers showed psychosomatic symptoms well after their husbands, what would be the appropriate lag period to use for family members? How could that be known? Are there cycles of life in which other life changes occur and in which unemployment is most difficult? For example, what about the young man with many debts and two young children?

Is there truly a psychological process that goes on during unemployment?

If there is, is it due to role loss?

Or is it due to reduced economic status?

How closely is it related to the cycle of benefits available?

Does it vary between those with high long-term benefits and those with more modest short-term unemployment coverage?

Do people make poor choices during this "unemployment experience" for health, for money, for friends, family, and new jobs?

—It has been demonstrated that adaptation to life events, primarily, through not exclusively negative life events, takes a toll of an organism and reduces its defenses against disease.

—Life events have been shown to be positively correlated with the unemployment rate.

—The number of life events to which an individual must adjust in a prescribed period of time has been shown to be a significant, if not strong, predictor of illness.

Does stress do all that? If so, how?

How can we explain different responses to stress?

For example, why do some workers regard periodic layoffs with equanimity while others do not?

—Persons of low socioeconomic status experience more illness than persons of higher socioeconomic status.

Who is stressed most by unemployment? Is it those whose resources are few and who will endure most hardship? Or, is it those with resources who have the most to lose?

—Stress has been shown to be associated with joblessness, and with jobs.

What is more stressful? To lose a job which is almost exclusively a source of income? Or is it worse to lose a job with prestige, authority, and prerequisites?

Which is worse? To work at a highly stressful, ill-rewarded job or to lose it?

Which is worse? To remain at work with increased job responsibilities? Or to be selected for layoff? At least one study suggests that those remaining suffer more. Why is that?

Is it possible that individuals, both employed and unemployed, in a recessionary period undergo some similar types of stresses and some different ones and that some adapt and that some do not?

—Myocardial infarction—as well as other types of heart disease—has been found to be positively correlated with high numbers of life events.

How long is the appropriate lag between job loss and, for example, serious cardiac problems? How do we know that?

—Hypertension is exacerbated when job loss is anticipated.

Which is worse? Increased hypertension when job loss is anticipated and the later reduction of this hypertension? Or the increased hypertension associated with job pressures?

—Social support appears to buffer or moderate the negative impact of job loss on well-being.

What really matters? That there is social support available, from both formal and informal systems? Or that people perceive that it is not available, whether it is or not?

—Some individuals appear to adapt to job loss while others do not.

What characterizes a "successful" adaptor versus an "unsuccessful" one? Do they come in all socioeconomic levels or do they cluster?

—Unemployment is significantly associated with low levels of self-satisfaction. Skidders, those whose careers have been episodic with recurring bouts of unemployment punctuated with lower status and lower-wage jobs, are at greater risk for mental illness.

Are there examples of "employment careers" carrying risks for pathology and how do they compare with the "unemployment careers" that do?

Is it necessary to trace every pathology to a job loss to establish the argument that they are related?

What role do people's expectations play in this process?

What role do people's perceptions of others' expectations of them play in this process?

Why do some people who remain unemployed or who become reemployed at lower wage and status jobs remain healthy while others who were reemployed more rapidly at higher wage rates fall ill or commit suicide?

The lists of things which are established, and points which are still in question reflect clearly the state of research in the field. The outer boundaries of the area have been set as the aggregate economic change indicators are related to the indicators of pathology, thus marking out a battleground where the variables are more numerous and much less precise. Despite the large array of excellent studies we have reviewed here, and the considerable learning and intellectual breadth demonstrated by their authors, we are still in serious need of a theory or several competing theories

which can encompass the variety subsumed across the units of analysis, from the economy of the nation to the undetected links between the perceptions of an individual's mind and the accompanying and potentially significant responses of the cells of that individual's body. Needless to say, this set of theories should be economical, elegant, and subject to testing under the vagaries of non-experimental situations. Moreover, the formulation should be stated so as to satisfy economists, sociologists, psychologists, and researchers in public health, medicine, law and statistics. Not only is the generation of theory critical to productive research in this area, but it has dramatic practical implications as well.

The Importance of Theory

The importance of selecting one theoretical model, or a combination, that best describes how economic change influences the occurrence of mental and physical illness and social deviance may not be apparent to concerned policymakers. Their immediate interest may be limited to the empirical question of to what extent does economic change cause the occurrence of pathology (i.e., to what extent, and in what direction, does an increase in unemployment in the labor force cause a change in the occurrence of mental illness in the population?). Yet, there are at least two important reasons for first considering the validity of the various theoretical approaches on how economic change impacts on pathology.

A large share of the empirical studies in this field was conducted with the intention of proving or disproving a previously held theory or theories on individual reaction to economic change. As a consequence, the variables selected or emphasized for testing purposes, as well as the research methodology employed, may have been determined for purposes specific to the testing of a particular theory. It is possible that two independent researchers using the same data, may achieve different and equally significant empirical conclusions as to the effect of economic change on the occurrence of pathology, because their empirical models were specified in accordance with their theoretical requirements. An example of this is the different theoretical positions held by Brenner and Eyer about whether negative or positive economic change has the greater effect on rates of pathologies. Brenner and Eyer investigated the same data using radically different lag structures in order to empirically prove their hypotheses. The selection of one set of empirican results as valid over another may carry with it the simultaneous selection of one theory over another. and vice versa. A policymaker should be concerned with the reasonableness of a particular theory to the same extent that he is concerned with the validity of the empirical results that are attached to it.

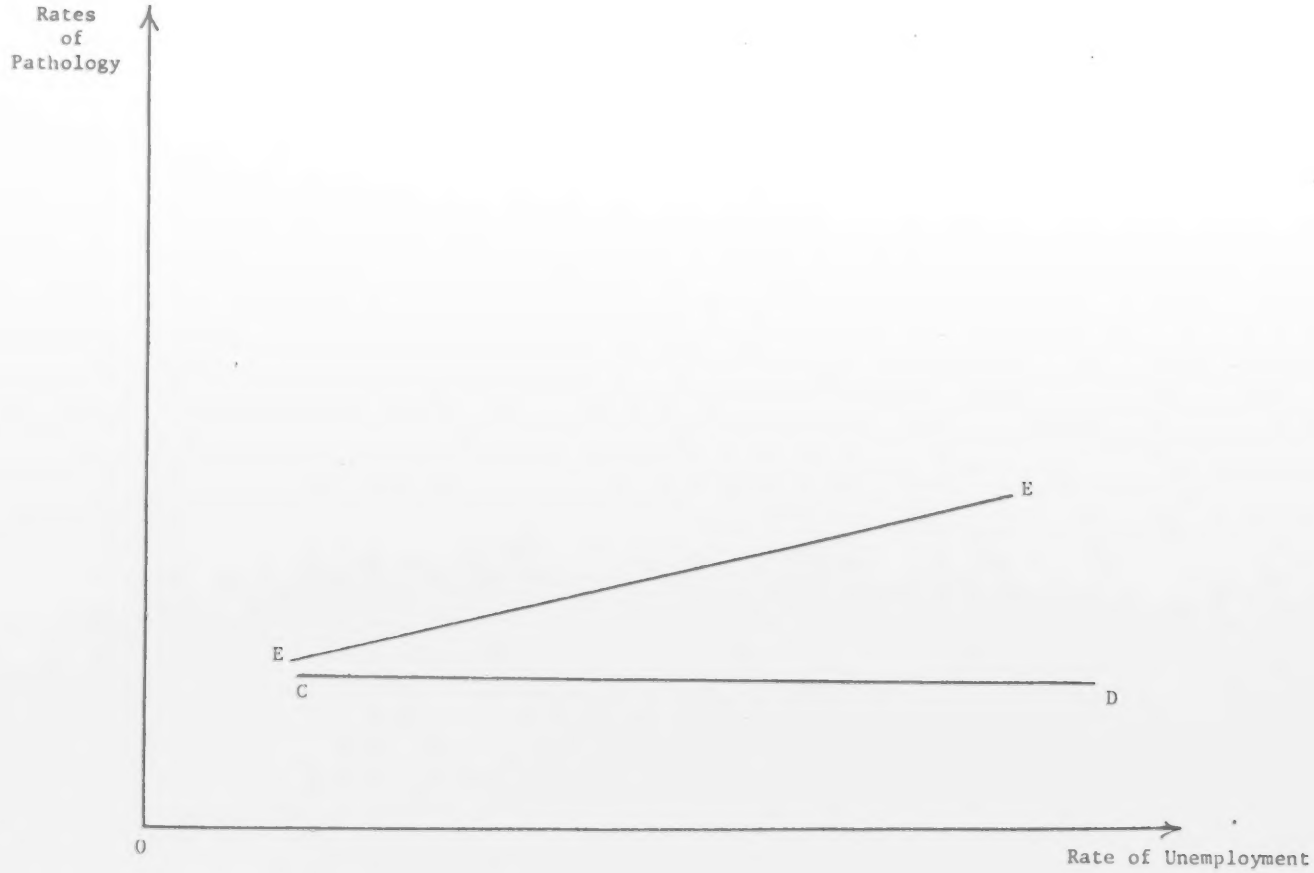
The second major reason has to do with the different implications various theories have for the effect of the quality or quantity of economic change on the occurrence of pathology. An important example is the possibility that the effect of an increase in unemployment may be substantially different, and may impinge upon different groups, depending upon the original level of unemployment in the economy. In this regard, the studies that have linked undesirable economic change to increased pathology can be roughly

grouped into four major categories that predict different patterns of outcomes to changes in the rate of unemployment at various levels.

Consider the graph labeled Figure 4 below. The rate of unemployment is measured on the horizontal axis and increases from left to right. Rates of pathology per some unit of population are measured on the vertical axis and increase from bottom to top. To date, empirical research of the type performed by Brenner has shown a relationship between the rate of unemployment and rates of pathology similar to that demonstrated by the line labeled EE in Figure 4. As the unemployment rate rises, rates of pathology will rise in a positive linear fashion. A maintained increase in the unemployment rate from a level of 5 to 7 percent will result in the same increase in rates of pathology as an increase in the unemployment rate from 8 to 10 percent The linearity of the empirical pattern is unsupported by any particular psychological theory, and appears in the literature only because of the statistical specifications of the empirical models used by researchers such as Brenner.

In contrast, consider the horizontal line labeled CD in Figure 4. This line demonstrates the relationship between the rate of unemployment and rates of pathology hypothesized by uncovering theorists such as Catalano and Dooley. As line CD illustrates, there is no relationship between the rate of unemployment and actual rates of pathology. As the rate of unemployment increases, actual rates of pathology will not change except for possible random disturbances around the line CD. Uncovering theorists would maintain that a demonstrated relationship such as that shown by line EE is possible with the use of archival data, but that what researchers such as Brenner are actually revealing is a positive linear connection between the rate of unemployment and the rate of institutionalization, not an actual relationship between the unemployment rate and the rate of mental illness or pathology.

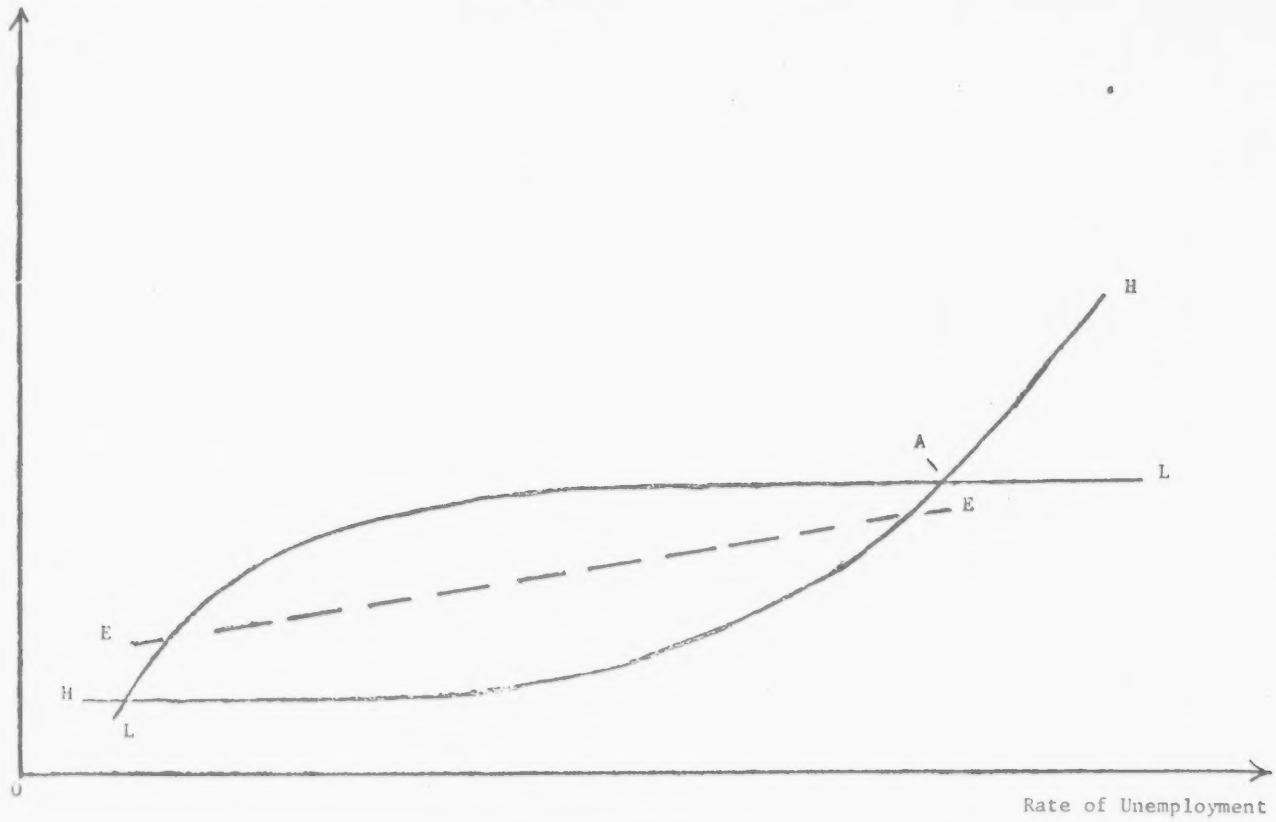
Figure 4



In the past, labor economists have shown that a rise in unemployment would have its greatest effect on joblessness for men and blue-collar workers in terms of absolute numbers, and upon skilled workers in terms of a percentage increase in the rate of unemployment. A recent set of hypotheses set forth by Gardner (1980) gives a more complicated version of the relative impact of higher unemployment on various demographic groups. According to Gardner, a rise in overall unemployment would result in a reduction of the supply of jobs at every skill level. However, instead of a resulting corresponding rise in unemployment for workers at every skill level who held these jobs, a process of skidding and bumping would ensue. Workers of higher ability who have been displaced from their matching skill-level jobs will in turn displace lower-ability workers from their matching lowe-skilled employment. This process would continue until the lowest-ability workers would be pushed into unemployment or withdrawal from the labor force. The greater the increase in overall unemployment, the higher the ability level of those who are the last to be pushed into unemployment, and the greater the amount of skidding that would occur for workers at every ability level. This model of the distribution of job loss has crucial and differing predictive implications for the rate of pathology, depending upon the size of the unemployment increase and the theory that is used.

Consider Figure 5. The curve labeled LL increases at a higher rate at low rates of unemployment, but gradually flattens out as higher rates are reached. Thus, a larger increase in the rate of pathology would occur when the unemployment rate increases from 5 to 7 percent, than would be experienced when the unemployment rate increases from 8 to 10 per cent. Such a curvilinear relationship between the rate of unemployment and the rate of pathology would be predicted by psychological theories that stress the connection between low socioeconomic status and pathology, or social selection theories. If lower socioeconomic status and low levels of ability in the labor market are related, a stronger relationship would exist between increases in unemployment and increases in pathology at lower rates of unemployment than at higher rates. In fact, a mild recession that started from a position of low overall unemployment would generate more adverse outcomes than a severe recession that started from a position of relatively high unemployment. According to social selection theory, high socioeconomic status individuals, who generally possess high ability and high occupational status, face smaller risks of potential pathology, due to such factors as better adaptive capabilities, more social support, or even better nutrition. When these individuals finally feel the effects of undesirable economic change, during periods of very high overall unemployment, they are seen to be better equipped to deal with the resulting stress than lower socio-economic status groups.

Figure 5



In sharp contrast to the explanation presented above, consider the curve labeled HH, which demonstrates a flat or weak relationship between low rates of unemployment and rates of pathology, becoming steeper and stronger at an increasing rate at high rates of unemployment. Thus, a larger increase in the rate of pathology would come about when the unemployment rate increases from 8 to 10 percent than would occur when the unemployment rate increases from 5 to 7 percent. This curvilinear relationship between the rate of unemployment and rates of pathology, given Gardner's description of the unemployment process, is suggested by psychosocial theories that see a connection between relatively high socioeconomic status and economic change the induced pathology. Theories that emphasize role identity, relative economic deprivation and social causation maintain that those who have the most to lose may suffer the most severe psychosocial outcomes due to economic adversity. The higher the overall employment rate, the stronger will be the likelihood that high socioeconomic status individuals such as skilled prime-aged white males will either suffer unemployment or a loss of occupational status (skidding). Since such individuals have more to lose and have more ego investment (it is argued, in their economic role identity), than low socioeconomic status individuals, they are more susceptible to stress caused by economic deprivation.

The differences between the predictions of rates of pathology due to increases in the rate of unemployment suggested by the various psychosocial theories are greatest at very high unemployment rates. Consider Figure 5 once again. Curve LL and HH actually converge towards one another until they intersect at some medium unemployment rate, at A, after which they would increasingly diverge. The line representing the linear empirical pattern, EE, has been reproduced in Figure 5 as a dashed line. Until the two curves intersect at point A, the dashed linear line, representative of the empirical work performed by Brenner, would lie between the two curves, and give a fair approximation of an average of the two curves' predictive relationships between the rate of unemployment and the rates of pathology. However, after HH and LL have intersected, EE may or may not produce a useful average of the two predictive relationships, depending upon the steepness of HH.

In fact, as Brenner himself has pointed out, the use of a linear relationship model may result in a large underestimate of the effect of unemployment increases at high existing rates of unemployment upon rates of pathology. Further, the existing linear empirical model may not be trustworthy at high rates of unemployment because there have been so few instances in the past when rates have reached current levels. The existence of current double-digit or "hyper-unemployment" rates, now increasingly common across all regions and industries, strengthens the relevance of Gardner's hypothesis, and makes more crucial the choice of a psychosocial theory. For if theories that stress the susceptibility of high socioeconomic groups to economic change-induced pathology are correct, then the potential social costs of current recession with its almost unheard of rates of unemployment for prime-age males, may be overwhelming and unexpected.

A Discussion of Social Costs

Any discussion of the social costs of economic change should begin with what is meant by social costs. To an economist, social costs might refer to the costs of public externalities or spillover effects brought about by a market activity, that are borne by everyone in society, whether they are participating in the market or not. An example of a social cost would be air and water pollution in a community that is generated by a factory plant, and which affects everyone in the community whether they are connected to the plant or not. However, this clearly is not the definition of social costs usually meant in the discussion of social pathologies brought about by economic change. The unemployed are usually those who bear the bulk of the costs of unemployment, and they are still participating in the labor market if they are looking for work.

Instead, what seems to be meant by the social costs of economic change are those adverse changes in non-economic well-being brought about by economic change. In particular, social costs of economic change seem to refer to those costs that are usually not quantified in monetary terms or even considered by economists as costs of economic change. Although the social costs of economic change are usually attached to adverse changes in social behavior or well-being, apart from changes in economic behavior or well-being, very real and large economic costs are usually connected to them. In order to see this connection and to simplify the concept of social costs, consider the following model of the costs of economic change that has proved useful in the community cost literature of plant closings.

The overall cost of economic change to a community can be subdivided into two general categories of costs: private costs and public costs. Each of these categories can be further subdivided into two further classifications: economic loss and non-economic loss.

Private economic losses refer to those exclusive economic costs specifically suffered by individuals and business firms in the community as a result of the economic change. An example of the private economic loss brought about by an increase in unemployment would be the loss of after-tax income experienced by the unemployed themselves, or its reverse, the loss of the output of goods and services to consumers that could have been produced by the unemployed. This is usually the major cost attached to cyclical unemployment by most economists. Economists have noted that the whole of this cost may be greater than the sum of its parts since falling productivity of those still employed has been associated with periods of rising unemployment, and part of the lost output due to increased unemployment would have taken its form in the production of capital goods necessary to maintain or increase productivity in the future.

Private non-economic losses refer to those exclusive non-economic costs suffered by individuals and their families as a result of economic change. It is this subcategory of costs that contains much of what is referred to as social costs, including the mental and physical illness personally experienced by individuals and their families as the direct or indirect result of economic change. Included also is the possible ultimate cost of mortality, whether due to suicide,

homicide, accident, or chronic disease. There is a strong interconnection between private non-economic loss and additional private economic loss. It is known that the economic loss of employment and income suffered by a displaced worker can bring about serious non-economic costs to the individual and his family, primarily because of the stress brought on by long-term unemployment. These non-economic costs can, in turn, bring about further economic losses to the worker, as his ability to find reemployment and hold a job throughout a portion of his remaining work life will be seriously hampered by the psychological, family, and medical problems occasioned by the original permanent job loss. Chronic illness or mortality, of course, may bring about a direct private economic loss of after-tax income for either the individual or family.

Public economic losses refer to those non-exclusive economic costs, brought on by economic change, mutually suffered by all members of society, and borne by either the societal entity as a whole or allocated according to some distribution scheme. Examples of public economic losses associated with unemployment include lost income taxes, the cost of unemployment compensation, and the cost of providing social, mental health, and medical services to the unemployed and their families. The first two costs are results of the existence of, and alleviation for, the occurrence of private economic loss due to increased unemployment, and are usually considered by economists. The latter category of public economic losses is directly connected to the occurrence of private non-economic loss, and represents the actual public economic cost of pathologies which are usually referred to as the social cost of economic change.

Finally, public non-economic loss refers to those non-exclusive, non-economic costs, as a result of economic change, mutually suffered by all members of society. Examples of such costs may include the long-run disorganization of society as a result of long-term economic stagnation. More specifically, such disorganization could bring about the loss of economic and political morale, the destruction of much of the informal support structure in local communities, and perhaps an increasing disregard for public law and order.

It is clear that public costs, both economic and non-economic, are closest in concept to the economists' idea of social costs. An increase in overall unemployment will not, of course, result in job loss for the majority in the labor market. However, it is very likely that everyone will pay part of the public cost associated with the increase in unemployment, whether through increased taxes or through the alternative cost of sacrificing other public goods in order to finance expenditure on the public costs of unemployment. Economists know a great deal about the public costs of unemployment associated with lost taxes and increased compensation payments. Until recently, however, very little has been known about the public costs associated with private non-economic loss. There is every indication that the automatic costs attached to outpatient and inpatient medical and psychological services, police deterrence, and imprisonment, that are triggered by economic change, are very expensive. These costs are incurred in some of the most inflationary sectors of the economy. The recognition of these heretofore ne-

glected public costs should play an important role in social decisions on the desirability of economic change.

Brenner (1979a) has estimated the economic cost of a sustained-rise of 1.4 percent in the unemployment rate for the period 1970–1975. Included in Brenner's cost calculations is the income loss suffered due to either increased mortality or institutionalization, and actual public outlays connected to incarceration or hospitalization. In 1981 dollars, these costs amount to about $11.8 billion. Not included in Brenner's cost of pathology total are costs incurred for outpatient treatment for the unemployed, the cost of increased police deterrence, and costs suffered by victims through increased crime. Brenner then adds an estimated cost for increased compensation to the unemployed included in the sustained 1.4 percentage point increase in the rate of unemployment, raising the total cost over the five year period to about $35 billion in 1981 dollars. Not included in this final total is the value of lost output of those unemployed who were not institutionalized, or who did not suffer mortality. The inclusion of these additional alternative costs would substantially raise the overall economic cost of the sustained rise in unemployment.

Evidence now supplied by Brenner and others that a sustained increase in unemployment is responsible for a related and significant increase in public expenditures makes it more likely that government programs designed to reduce the rate of unemployment will help pay for themselves in reduced public expenditures over the long run. The immediate costs of such programs, of course, will continue to remain expensive in terms of both public and private costs. However, the potential benefits of countercyclical policy can now be seen as far greater then previously realized, in terms of avoiding the public and private costs of economic change. For it is not only the identification of non-economic costs, such as increased social pathology, that is important in social decisionmaking concerned with the desirability of economic change, but also their attached monetary cost in terms of public outlays, especially in these times of budgetary restraint.

Concluding Remarks

Several important points remain to be made, primarily concerned with the degree to which the research we have reviewed highlights some important variables and diminishes the initial importance of others as well as the amount of support the research data provide to one theoretical formulation rather than another.

We find that a lack of definition among researchers limits the current importance of the concept of social support. As we have observed above, there is a seeming contradiction in a model which postulates that macroeconomic change promotes social disorder which contributes to personal disorder, and then explain the lack of subsequent personal problems by the presence or absence of social support.

It is also important to distinguish formal support such as that provided by agencies and institutions from informal support provided by neighbors, friends, and kin. It is also crucial to assess the degree to which formal and informal systems interact. For exam-

ple, in the current recession, formal support systems have been curtailed with the belief that informal systems would develop as adequate, if not preferable, alternatives. The degree to which formal and informal systems operate together may vary considerably over the life cycle and across demographic groups. Data drawn from the past few years should reveal a great deal about the importance of these interactions since one variable, formal social support systems, has been changed.

The issues of definition and shifting perspectives also arise with respect to other intervening variables. There is no obvious reason why a single study could not capture macroeconomic indicators, indicators of actual personal economic status, as well as perceived economic status. In fact, the importance of income inequity in crime studies suggests strongly that both unemployment and income levels in relation to the cohort in which the individual is situated should be included. Clearly, time series studies serve to establish a relationship, but additional investigation is required to clarify the critical points in the post-termination process. For example, it may be that stress promotes the development or redevelopment of unhealthy consumption patterns and this combination may interact to exacerbate existing conditions.

We have already addressed the question of differing rates of unemployment above. The studies we have reviewed generally provide data indicating that outcomes are not particularly negative when the prevailing unemployment rate is relatively low, and when, incidentally, there should be no effect on formal support systems. However, data taken when the prevailing unemployment rate is high show outcomes for study participants to be more negative, and the chances are that formal support systems are under some pressure at such times as well. While the process is not yet clear (completely suitable theory has been developed), some general observations based on this mass of findings can be advanced.

Although some evidence exists to support a social selection position, we believe that the weight of the data at this time justifies tentative acceptance of a social causation argument. Despite the fact that powerful correlations exist between pathology and low socioeconomic status, this evidence simply suggests that a social causation argument may not be the appropriate approach for certain groups whose labor force attachment has been limited or marginal. It appears to us that the higher the unemployment rate, and the greater the constriction of all types of resources, the more powerful a social causation position becomes.

We also accept, with some reservations, the idea that provocation is the more compelling argument at this time. Detailed evidence about the relative weight of variables such as capacity of institutions, and family behavior, is required before an uncovering hypothesis can be accepted. We believe that the evidence linking life events to stress and stress to disease is strong, and however incomplete that general approach may now be, it appears a more convincing argument than any other now available. Modifications of it may very well, in the future, provide the fuller picture which is necessary for program development.

Our review of the literature available at this time has led us to support in general the position adopted by Dr. Brenner while sug-

gesting that some new variables are potentially useful additions to his model, such as relative unemployment rates among and across cohorts.

The importance of understanding fully the painful dynamic process that leads from economic change to the occurrence of costly social pathologies cannot be emphasized enough. In recent years, the national economic experience has been one of increasingly severe swings in activity, highlighted by the almost unprecedented decline of major basic industries and the rise of new nontraditional types of economic endeavor. This pattern of radical economic change has resulted and will continue to result in the traumatic displacement and uprooting of hundreds of thousands of Americans and their families. For many, the personal struggle to adapt to a new set of social and economic circumstances that may bring about substantial hardship, without the promise of sufficient outside help, may prove overwhelming, and even dangerous to life itself. That is why an increased knowledge, not only of the extent of this ongoing loss of national well-being, but also of the process through which it comes about, is necessary and crucial if policymakers can take steps to ensure that the social costs of the coming of the post-industrial society do not exceed its potential social benefits.

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Allison, John P. "Economic Factors and the Rate of Crime" LE (1972)	Archival (Cross-Sectional) 1960?	Chicago Area All communities over 25,000 within 40 miles	Crime rate of community UCR data? Per capita?	Significant: 1) Rate of unemployment 2) % of males 3) Parks and Recreation expenditures 4) Mean yrs. of education 5) % age 15-24 6) Distance from core of Chicago	Ecological
CONCLUSIONS: Unemployment by far the most significant explanatory variable, then % of males in population. Uses stepwise regression.					
COMMENTS: Strong support of UCR - crime unemployment relation. However article is scant on study details. N=?, construction of variables? Also sign of mean years of education is positive?					
Bartel, Ann P. "Women and Crime: An Economic Analysis"	Archival Cross-Sectional	33 U.S. states in 1970	FBI collected crime arrests per capita for females and males	1) Labor force participation rate of women, age 16+ 2) Number of pre-school children, and school age children 3) Deterrence variables 4) Unemployment rate 5) Median female age 6) % of population living in urban area 7) Median education 8) % of females, nonwhite 9) % of families below 1/2 median income 10) Median family income	Economic Model of Crime
CONCLUSIONS: Female participation in labor force rate has no significant effect. Number of preschool children has negative and significant effect on female crime. Unemployment rate has positive, but insignificant relation to female property crime.					
COMMENTS: Author concludes that number of preschool children at home raises home market wage, and child raising activities will be substituted for illegal activities.					

29-272 O-84---7

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Bechdolt, Jr., B.V. "Cross-Sectional Analyses of Socio-economic Determinants of Urban Crime" RSE (1975)	Archival (Cross-Sectional)	222 Los Angeles Census Tracts (1960) and 19 downtown Chicago Police Precincts (1970)	Property crime rate Violent crime rate	Unemployment Population density Crowding variable Employment density (Commercial employment per acre)	Ecological Model
CONCLUSIONS: Unemployment has very strong & significant effect or relation to both property & violent crime given crowding & population density.					
COMMENTS: "It does not matter how high or low the crime of an area is in determining the rate of property crime. What matters is the rate of unemployment."					
Brenner, M. Harvey (1979) (1976)	Archival (Time Series)	U.S. Bureau of Prisons LEAA & Census	State prisons imprisonment rate (lag 0-2 yrs.) per 10,000 U.S. 1935-41, 1946-65 1935-41, 1946-73	Total unemployment rate for ages 16+ Population of males 15-29 Inflation or % change in CPI Linear & log Time Trends & Dummy Trend (1967-71)	No explicit theory except for stress
CONCLUSIONS: No explicit theory except for stress model.					
COMMENTS: Aggregation makes use of state prison data questionable. Results are indirect.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Danzinger, S. & D. Wheeler "The Economics of Crime: Punishment or Income Redistribution" RSE (1975)	Archival (Time Series) & (Cross-Sectional)	U.S. Time Series 1949-70 -------- 57 large SMSAs 1960-61 Cross Section	Per capita UCR index robberies & aggravated assaults	Income gap variables Inequality variables Deterrence variables Race Youth percentage SMSA size & density U.S. unemployment rate	Mixture of Economic Model of Crime and Ecological Model of author's own making; includes allegiance to social contract function and income distribution.
CONCLUSIONS: Relative income change, not absolute income is related to criminal behavior. Inequality, not poverty may cause crime.					
COMMENTS: Unemployment and property crima positively related, but results are quite insignificant. However gap variables could be strongly correlated with unemployment.					
Ehrlich, Issac "Participation in Illegitamate Activities: A Theoretical and Empirical Investigation	Archival (Cross-Sectional)	47 states	UCR All offenses rate per 100,000 current + lagged one year	Deterrence variables: Probability of arrest & conviction Probability of sentence Income (legal & illegal) Race Probability of un employment Age SMSA % of population	Time allocation or wealth maximization Original Theory for Economic Model of Crime.
CONCLUSIONS: Deterrence strongly and negatively related. Non-white dummy variable positive and significant. Income, legal and illegal significant. Unemployment and age are indeterminate.					
COMMENTS: Problems arise defining illegal income (uses median legal income for proxy). % of families below poverty level measure (legal income opportunity measure) is positive and significant and may be collinear.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Fleisher, Belton M. "The Effect of Unemployment on Juvenile Delinquency" JPE (1963)	Archival (Time Series) pooled (Cross-Sectional	Boston, Chicago Cincinnati Uniform Uniform Crime Reports 1936-52 U.S. 1932-68	Arrest rate for property crimes, broken down by age for U.S. & for 3 cities	Civilian male unemployment rate for ages 14-19 & 20-24 Time variable Report dummy variable Ratio of reports to arrests Military personnel rate	Alluded time allocation model
CONCLUSIONS: Unemployment is positively and significantly related to rates of juvenile delinquency (16-24).					
COMMENTS: Refutes Glaser and Rice's age difference of the sign of unemployment on property crime. Remarkably, calculated elasticity for du/u/dD/D is almost identical to Singell's.					
Fleisher, Belton M. "The Effect of Income on Delinquency" AER (1966)	Archival (Cross-Sectional)	74 census tract communities in Chicago 1958-61 Census of Pop. 101 U.S. cities over 25,000 in 1960-62	Number of court appearances of males 12-16 in age per 1,000 males 12-16 UCR arrests of males for property crime, age 25 & below	1) Male civilian unemployment rate 2) Mean incomes of second lowest and highest quartiles of income recepients 3) Proportion of females over 14 divorced or separated (broken families) 4) Population variable for mobility	Ecological (however, return to illegal activity is included by income of highest quartile)
CONCLUSIONS: Income has negative and significant effect overall. Unemployment has positive and significant effect on delinquency rates.					
COMMENTS: Divides samples into 3 groups based on high, medium, and low proportions of broken homes. Makes strong case for alleviating unemployment as policy approach to lowering juvenile delinquency, because it attacks income inequality also.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Forst, Brian E. "Participation in Illegitimate Activities: Further Empirical Findings PA (1976)	Archival (Cross-Sectional) 1970	All 50 states plus D.C. (N=51) 1970	Number of FBI UCR index crimes (UCR) per 100,000	Deterrence variables Police budgets Correction budgets Population migration and density Income variables by state Unemployed or not in labor force totals for 16+ Teens, males, temperature, south	Economic Model of Crime
CONCLUSIONS: Income variables did well in index crime rate. Unemployment shows positive but insignificant. Deterrence variables were found not significant.					
COMMENTS: Uses Ehrlich style. Simultaneous System - found incarceration not significant in reducing UCR.					
Gansemer, D.G. & Lyle Knowles "The Relationship between Part I Crimes and Economic Indicators" JPSA (1974)	Archival (Time Series)	City of Los Angeles 1960-72 Local data collection	Part I crimes: Against persons, property crimes reported to LAPD	Bank deposits, retail sales, employment in Los Angeles	Indirect use of Economic Model of Crime
CONCLUSIONS: Positive and significant correlations with all 3 indicators especially bank deposits - seen as support of Economic Model.					
COMMENTS: Total crimes instead of crimes per capita used as dependent variable, thus population trend isn't controlled for at all. Authors conclude that positive economic growth causes crime to rise.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Glaser, D. and K. Rice "Crime, Age and Employment" ASR (1959)	Archival (Time Series)	Boston, Chicago, Cincinnati 1930-56 Time Series	For males: Property theft crimes against persons misdemeanors (unadjusted) for population increases FBI UCR	U.S. male labor force unemployed	Ecological or sociological, i.e., Parson's theories on age and sex roles
CONCLUSIONS: Juvenile crime (<20) inversely related to unemployment. Adult crime shows strong positive relationships.					
Henry and Short "Suicide and Homicide" (1954)	Archival (time Series)	Various combinations of U.S. cities & U.S. rates 1900-48	Homicide rate Suicide rate Buglary rate 1929-49 Robbery rate 1929-1949	Ayres Index of Business Activity. Race, sex, marital status	Anomic or frustration/aggression, model conditioned by degree of external restraint. (frustration caused by loss of status due to flow of economic forces)
CONCLUSIONS: Homicide positively related to business conditions due to race differences. Suicide and property crime negatively related to business conditions.					
COMMENTS: Authors use Burns-Mitchell Technique for correlating business cycles to social cycles after second degree polynomial detrending (like Brenner).					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Hoch, Irving "Factors in Urban Crime" JUE (1974)	Archival (Cross-Sectional) 1960 and 1970	137 (1960) 136 (1970) SMSA's in United States	7 major crimes (FBI, UCR) Murder, rape, robbery, aggravated assault, buglary, larceny autotheft	Urban size Density % black population Scale measures Ethnicity Location-Climate demographic-economic	None really; multiple stepwise regression on large number of SMSA characteristics
CONCLUSIONS: On unemployment - Unemployment significantly and positively related to property crimes. Negative relation for violent crime.					
COMMENTS: Very high correlation between burglary and unemployment. Current unemployment was better explanatory variable than lagged unemployment.					
Phillips, H.L. Votey, Jr., & D. Maxwell "Crime, Youth, and the Labor Market" JPE (1972)	Archival (Time Series)	U.S. 1952-67	UCR Larceny arrest rates for males 18-19 in age divided by the proportion of offenses cleared by arrest; same for other property crimes	Employment = ratio of male, white civilian labor force to total noninstitution population. Population is the ratio of male, white civilian population to total noninstitutional population: same variable for nonwhites	Demographic variant of Economic Model of Crime
CONCLUSIONS: Unemployment is positively related to crime rate, but labor force participation proves far more significant.					
COMMENTS: Labor force participation is assumed to reflect employment opportunities for youth, not tastes or education performance.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Pogue, Thomas F. "Effect of Police Expenditures on Crime Rates: Some Evidence" PFQ (1975)"	Archival (Cross-Sectional)	3 samples of SMSAS n 1962 - 163 1967 - 163 1968 - 66	UCR (FBI) for SMSAS Total Crime Murder, rape robbery, assault, burglary, larceny, auto theft per 100,000	Up to 4 simultaneous equations using 17 exogenous variables including unemployment and change in unemployment. Uses law enforcement expenditures for deterrence variable. Many income & demographic variables	Economic Model of Crime Community tries to minimize loss function of crime and police expenditures
CONCLUSIONS: On unemployment - Unemployment rates have little systematic impact on crime rates while % low income does. Police expenditures do not affect crime rates.					
COMMENTS: However, although unemployment rates have no significant effect, variables correlated with unemployment rates (income, % poor, % white, % youth) do have a significant effect. Crime rates are a function of inequality in the distribution of income. Economic conditions may influence attitudes, not Benefit/ Cost calculations.					
Quinney, Richard "Structural Characteristics, Population Areas and Crime Rates in the United States" JCLCPS (1966)	Archival (Cross-Sectional)	50 states in in 1960, 1961 divided into 1. SMSA population 2. Urban 3. Rural	offenses known to police on UCR index crimes per 100,000 (mean annual rates computed On basis of 1959-61 data)	1. Socioeconomic Variables: average schooling, family income, % white collar males 2. Differentiation & Development Variables: % nonwhite, change in residence, % employed in manufacturing	Ecological Background variables connected to SMSA explain crime rate "Structural Characteristics of Population Aggregates"
CONCLUSIONS: No conclusions on effect of economic change. "Crime is a social phenomenon." State is not a good categorical variable. SMSA's, rural and urban areas within states are.					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Singell, Larry D. "An Examination of the Empirical Relationship Between Unemployment and Juvenile Delinquency" AJES (1967)	Archival (Cross-Sectional) & (Time Series)	441 Detroit Census Tract Subcommunities in 1960 and monthly city data (1950-61)	Juvenile Crime (Contacts with Youth Bureau of Detroit Police Dept.	Unemployment by Sub-community (1960) and for city (monthly 1950-61)	Time Allocation Delinquency positively related to unemployment
CONCLUSIONS: Cutting unemployment by 1% would lead to reduction of 1/4 to 1/6 in the delinquency rate.					
COMMENTS: Good city data. Amount of variation explained is small.					
Sjoquist, D.L. "Property Crime and Economic Behavior: Some Empirical Results" AER (June 1973)	Archival (Cross-Sectional)	Selected 53 Municipalities with 1960 populations of 25,000 to 200,000 1968	Ag. 3 types of Property Crime Per capita (FBI collected reports)	Arrests / No. of crimes Convictions / No. of crimes Convictions / No. of arrests Average prison sentence Retail sales per estate % nonwhite Mean school years completed Population density Poverty dummy BLS unemployment rate	Economic Model of Crime
CONCLUSIONS: Unemployment was significant and positive in sign. Income had a positive sign so a "gain" effect was postulated. $T = 2.794$ $R^2 = .638$					

CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Swimmer, Gene "The Relationship of Police and Crime" Criminology, (1974)	Archival (Cross-Sectional)	119 SMSA's with population over 100,000 1961	FBI UCR 7 major indexed crimes divided into property and violent crimes	Police expenditures per capita % of rich and poor families % nonwhites % 14-17 in age % of teenagers in school Median income Unemployment Expected sentence South, NonSouth dummy Population Population squared	Economic Model of Crime
CONCLUSIONS: Deterrence variables significant for violent crime, much less so for property crime. % white and % rich or poor significant and positive for property crime.					
COMMENTS: Utilized both OLS and TSLS. Makes assumptions on data inadequacy to support police expenditure's negative relationship with crime. Unemployment somewhat significAnt and positive under TSLS for property crime.					
Witte, A.D. "Estimating the Economic Model of Crime with Individual Data" QJE (1980)	Individual data 1969 or 1971 (Cross-Sectional)	641 randomly selected North Carolina ex-cons followed for ave. 37 months after release 1969 or 1971	Police Records Officially reported criminal activity or total number of personal and property offenses Both arrests & convictions analyzed per month separately	1) Wealth 2) Unemployment (month looking for jobs) 3) Deterrence variables (probability of arrest and of conviction, and prison sentence) 4) Tastes (background variables, prior history)	Test of wealth Maximization model according to Ehrlich & Block & Heinke Uses To Regression
CONCLUSIONS: Unemployment: Wrong sign encountered. Witte theorizes that measure is inadequate proxy for expected unemployment. Legal wage significant with right sign. Wealth significant with right sign. Deterrence variables significant.					
COMMENTS: Study results not generalizable to population. Illegal wage not measured. According to author, better individual-based studies needed.					

NON-CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Ahlburg, Dennis A. & Morton O. Schapiro "Socioeconomic Ramifications of Changing Cohort Size: An Analysis and Forecast of U.S. Postwar Suicide Rates by Age and Sex" 1982	Archival Time Series	U.S. vital statistics, census data CPS data (current) population reports) 1948-1976	Suicide rate per 100,000 population of appropriate age-sex group	1. Relative birth cohort size (i.e. ratio of males aged 16-29 to 30-64 yrs.) 2. Wachter's labor market tightness variable, UGAP 3. Divorce rate 4. Fertility rate 5. Female labor force participation rate 6. Real income	Easterlin's relative age-cohort model as applied to Durkheim's model of anomic suicide
CONCLUSIONS: Increase in cohort size leads to increased suicide rates for males and females age 15-44, as well as older women, slackening labor market has positive and significant effect on suicide rate for males, but not females. Real income is insignificant.					
COMMENTS: Authors use sophisticated econometric model to break apart direct and indirect (through effect on divorce) impact of relative cohort size on suicide rate. Members of large relative birth cohort more susceptible to economic change. Suggest that a one percent point increase in unemployment rate responsible for 318 more cuicides.					
Barling, Phillip W. & Paul J. Handal "Incidence of Utilization of Public Mental Health Facilities as a Function of Short-Term Economic Decline" AJCP, 8:1, 1980	Archival Time Series	St. Louis SMSA Jan. 1, 1970 (quarterly)	Outpatient and inpatient first admissions to two area mental health facilities (part of state mental health system)	1. Unemployment rate for St. Louis SMSA 2. Lagged values of unemployment rate 3. Education and Occupation categories	None
CONCLUSIONS: Inpatient first admissions to state mental hospitals are significantly related to short-term economic decline for low-status occupational groups (unemployed students, housewives and retired persons).					
COMMENTS: Increase in admissions occurs within 6 months after economic decline. Outpatient admissions not significantly correlated to economic decline.					

NON-CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Brenner, M. Harvey "Influence of the Social Environment on Psychopathology: The Historic Perspective" 1979	Archival Time Series	U.S. 1940-73 or 1950-73 (yearly)	Total mortality rate Suicide rate Cardiovascular mortality rate Cirrhosis mortality rate	1. Time trend 2. % growth expenditures on welfare from total expenditures 3. Number of college graduates 4. % Juveniles in total population 5. Various measures of long-term per capita income and short-term income changes 6. Unemployment rate (with effect lagged over 5 years)	Stress/provocation of economic change

CONCLUSIONS: Unemployment positively and significantly correlated with increased mortality over 5 year lag period. Per capita income growth showed a weaker association with increased mortality with a short 1-year lag.

COMMENTS: Brenner tests for effect of positive economic change (long-term per capita income) versus negative economic change (increases in unemployment) in the same equation on rates of pathology.

Cahill, J., T. Homer, and Mary McGurrin "Economic Change and Community Mental Center Utilization in Philadelphia: A Preliminary Report 1982	Archival Time Series	City of Philadelphia Jan., 1972 to June, 1980 (monthly)	Monthly aggregate service contacts for community mental health centers: (1) inpatient (2) outpatinet (3) partial hospitalization	1. Philadelphia SMSA unemployment rate 2. Real earnings in Philadelphia SMSA manufacturing industries	Stress of unemployment

CONCLUSIONS: As economy declines, overall demand for community mental health services increases, especially in terms of increases in partial hospitalization and inpatient services.

COMMENTS: Real earnings proved to be a weak predictor compared to unemployment. Virtually no time lag found between increased unemployment and increased service usage.

NON-CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Dooley, D., R. Catalano, R. Jackson, & A. Brownell "Economic, Life, and Symptom Changes in a Nonmetropolitan Community"	Combined Archival Time Series and Survey Results	Washington County Maryland Dec. 1971 through July 1974 (monthly)	1. Life events 2. Psychophysiological systems 3. Depressed mood measures (Collected by monthly survey of households)	1. Unemployment rate 2. Absolute employment changes 3. Work force size 4. Inflation rate (Archival economic data)	Uncovering Hypothesis

CONCLUSIONS: No measurable relationships found between economic change and dependent variables.

COMMENTS: Authors speculate that the failure to replicate their earlier urban-area findings in Kansas City, in this rural Maryland County may be due to urban-rural differences in satisfaction with community for various crucial subgroups.

Eyer, Joseph "Prosperity as a Cause of Death" IJHS, 7:1, 1977	Archival Time Series	U.S. data 1950-1975	Overall mortality rate and numerous mortality rates for various pathologies	U.S. unemployment rate	A social stress model (i.e. increased mortality induced by overwork, migration and harmful consumption associated with prosperity)

CONCLUSIONS: Death rate peaks coincide with peaks of economic prosperity. Only homicide and suicide reasonably associated with cyclical unemployment.

COMMENTS; Author strongly criticizes Brenner's use of long lag period in correlating unemployment with mortality. However, Eyer gives no justification of why his finding that a positive coincident association between chronic disease mortality and cyclical prosperity should occur, except that stress (and presumably pathology) occurs only shortly after economic change. Uses primarily simple graphical comparisons.

NON-CRIME

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Heller, Abraham & Mark J. Kasoff "Job Loss and Impact on Health" 1980	Archival Time Series	Dayton, Ohio SMSA (Montgomery County) mortal-rates and unemployment rates 1968-77 (yearly)	1. Overall mortality 2. Heart disease mortality, all ages 4. Above 3 mortal-ities for males, all ages 5. Above 3 mortal-ities for males age 45-64	Dayton, Ohio, or Montgomery County Ohio unemployment rate	Stress of Unemployment Model
CONCLUSIONS: Economic downturns are associated with heart and cerebrovascular death rates following a short-time lag. Especially true for older males, age 45-64.					
COMMENTS: Only simple graphical technique utilized.					
Sclar, Elliott D. & Peter Messeri "Estimating the Long-Term Impact of Economic Stag-nation upon the Mental Health of a Local Community" 1981	Archival Time Series	Fitchburg/ Leomister, Mass. mental health catchment area 1965-77 (quarterly)	Mental health service utilization of outpatient clinics (cases)	1. Total hours worked by staff of mental health clinics 2. Population 3. Unemployment 4. Implied economic stagnation	Stress Model of Unemployment and an economic stagna-tion explanation for the effect of an eroding social support systems
CONCLUSIONS: Economic factors can account for as much as 60% of the increase in outpatient utilization.					
COMMENTS: Unemployment on its own responsible for 20-40% of the increase in the trend of outpatient utilization. A possible 20-40% further can be implied to stagnation. No direct stagnation variable given. Capacity variable (total hours worked) is suspect.					

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Aiken, Michael, Louis A. Ferman, & Harold L. Sheppard Economic Failure, Alienation and Extremism Ann Arbor (1968) (The Packard Study)	Survey	Random sample taken from 4016 workers, originally 314, reduced to 305 then linked to a sample of 828 UAW	anomie, alienation	plant shutdown	Investigates Durkheimian notion of status change, particularly economically-linked downward change having strong association with social disintegration and with political alienation Kornhauser idea that mediating institutions to which are reduced through economic deprivation prevent rise of extremist movements.

CONCLUSIONS: Despite the identification through a morale scale of generalized declining morale and cynicism about political institutions, no other effects.

COMMENTS: The study was done 27 months after the closing. The best predictor of depression (as measured by the morale scale) was not predisplacement status but economic deprivation. Interestingly, as associated finding showed that 95% of the Packard workers claimed they had voted in the past two Presidential elections.

Alden, John R., Louis A. Ferman & Susan Gore The Unemployment Experience, Report to Center for Work and Mental Health. 242 pp.	Survey Longitudinal	446 unemployed people in Detroit, Michigan non-random sample	8 somatic symptoms 11 or 12 (for males and females respectively) physical symptoms, blood pressure	Unemployed status	Socioeconomic approach, social causation, provocation and aggrevation directly and indirectly related to economic deprivation. Anomie also featured in this approach.

CONCLUSIONS: Those with high levels of objective and subjective economic deprivation suffered most. Age and poor previous mental health best predictors of problems.

COMMENTS: Important results because study undertaken during a bad recession but utility limited to non-random sample.

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Brenner, M. Harvey Mental Illness and the Economy" 1973	Archival Time Series	New York State 1910-1967 and 1841-1960 Various periods used	Mental hospital admissions Admissions broken down by diagnosis	1. New York State manufacturing employment 2. Correlations broken down by age, sex, ethnic group, education level, marital stutus, and socioeconomic status.	Stress of unemployment provocation model. Also emphasizes susceptibility of higher socioeconomic status groups
CONCLUSIONS: Demonstrated a strong inverse correlation between manufacturing employment and mental hospital admissions. Especially true for middle-aged males.					
COMMENTS: Admissions for the very young and very old positively related to manufacturing employment. Lag of 1-2 years used. Association weaker for women and lower status groups.					
Brenner, M. Harvey "Estimating the Social Costs of National Economic Policy: Implications for Mental and Physical Health, and Criminal Aggression" 1976	Archival Time Series	U.S. 1940-1974 1945-1973 1940-1971 (sometimes excluding war years)	1. U.S. mortality rates a. general b. cardiovascular disease c. cirrhosis d. homicide 2. U.S. mental hospi-a tal admissions	1. Per capita income (U.S.) 2. Unemployment rate 3. Inflation rate 4. Time trends 5. Age, race, sex	Stress of unemployment or other economic change, provocation model
CONCLUSIONS: Association between unemployment (positive) and per capita income (negative) and mortality rates was consistent and significant. Inconsistent association found between inflation and mortality rates.					
COMMENTS: Second degree polynomial (Almon) lags used to fit regressions. Somewhat arbitrary lags of 0-5 and 1-4 years used. Predicted actual number of increased deaths attribute to sustained one percent rise in unemployment rate for period 1970-1975.					

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Buss, Terry F. & F. Stevens Redburn Shutdown: Public Policy for Mass Unemployment	Archival Survey longitudinal	FBI Crime ETC Public records 284 workers 220 spouses 84 control group UAW employed	Crime, mortality, liquor sales, United Way contribution divorces, dissolutions, new complaints marriage licenses bankruptcies, real estate transfers, new car sales, mental health measures (in survey)	Increased unemployment for steel workers due to Youngstown Sheet Sheet and Tube closing	Psychological stress model

CONCLUSIONS: Slight increase in traffic accidents possible mortality rates stable; liquor sales constant; United Way contributions dropped the year of the closing but rebounded; decreasing number of divorces prior to closing continued to decrease, domestic relations cases increase markedly in the two years, marriages a little less likely; bankruptcies, real estate transfers, new car sales all down but cannot be attributed to closing alone. From survey: Those still unemployed showed significantly higher aggression, anxiety, feeling of victimization and alcohol abuse.

COMMENTS: The loss of a job was not significantly stressful - not until the second wave did steel workers show more poor mental health than employed workers. However, long durations of unemployment were clearly stressful. The loss of a large portion of the sample in the second wave is particularly troublesome in this study.

29-272 O—84——8

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Catalano, Ralph & C. David Dooley "Economic Predictor of Depressed Mood and Stressful Life Events in a Metropolitan Community" JHSB, 1977 18, 292-307	Survey linked with Archival	NIMH Kansas City Study weekly prob sample of KC residents 18+ Total 1173	life events and mood changes	Regional and SMSA unemployment	Psychological model used. Hypotheses include proposition that measures of depressed mood and frequency of stressful life events will be significantly correlated with change in economic conditions and that the correlation will be greatest when psychological measures are lagged 3 months behind economic measures.

CONCLUSIONS: Mood and stressful life events are correlated with local and with local/regional economic measures. Regional unemployment rates more predictive of mood and life events than SMSA.

COMMENTS: The authors note that no exploration of the uncovering hypothesis was done while only partial exploration of provocation was accomplished. To that extent, provocation was validated but uncovering remains tenable Provocation is the Brenner strss-related model while uncovering resembles the intolerance model.

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Catalano, Ralph & C. David Dooley "Does Economic Change Provoke or Uncover Behavioral Disorder A Preliminary Test" in Ferman and Gordus	Survey Archival Case Openings	NIMH Kansas City Study plus inventory of case openings	Life events/ mood changes and mental hospital admissions (interaction tested)	Regional and SMSA unemployment	Tests relative power of "provocation" versus "uncovering" model
CONCLUSIONS: Study favored uncovering rather than provocation since case openings controlled for symptoms and straight case openings varied with economic change more than symptoms.					
COMMENTS: Capacity was not controlled in this study; moreover survey could have selected the asymptomatic. Theoretical strength is lent to uncovering by the Barker "manning" concept which permits deviance to a greater degree in an undermanned rather than a surplus situation.					
Cobb, Sidney & Stanislav Kasl "Termination" NIOSH Research Report, Cincinnati, Ohio, 1977	Survey and Physical assessment	100 men from 2 closed plants, 74 controls from 4 plants	Blood pressure, mental health measures, uric acid levels, serum cholesterol levels, insomnia, pulse rates, health-care seeking	Plant closing unemployment versus continued employment	Attempted to test a psychological formulation of response to unemployment based upon enduring characteristics of the person versus objective and perceived changes in environment. A psychological-physiological adaptation model emphasizing causation and economic deprivation
CONCLUSIONS: Job loss had little enduring effects upon psychological or physical health and symptoms appeared while closure was anticipated and then diminished.					
COMMENTS: Social support was advanced as an important mediating variables which reduced the effect of job loss. However, job loss occurred at times of low unemployment and most unemployed were reemployed rapidly.					

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Cohn, Richard M. "The Effect of Employment Status Change on Self-Attitudes," Social Psychology, 41:2, 1978, pp. 81-93	Secondary Analysis of Panel Survey of 5,000 families, annually 1968-72	Subsample, 1080 over over 5 years with employment status change non-equivalent control group design	Changes in self-satisfaction	Unemployed versus employed status	The psychological effect of job loss is closely related to changes in self-esteem and attribution of blame for job loss
CONCLUSIONS: Becoming unemployed leads to greater self-dissatisfaction related to role change, unavailable achievements and self-attribution of job loss.					
COMMENTS: This study provides generalizable findings about diminution of self-esteem after job loss.					
Frank, Jeanine A. "Economic Change and Mental Health in an Uncontaminated Setting," American Journal of Comm. Psychology, 9:4, 1981, pp. 395-410	Archival	State of Hawaii 9-72 through 12-75 monthly	First admissions to both inpatient and outpatient treatment	1. Change in size and structure of economy 2. Change in work-force each month interacting with the desirability of the change 3. Unemployment rate, measured by BLS as those collecting UI 4. Monthly number of quits and lay-offs	Hypotheses advanced for testing nearly all provocation and social causation.
CONCLUSIONS: Prime age males' admissions increased at downturns, middle income group's admission increased at downturns confirms Brenner's findings but with a shorter lag.					
COMMENTS: A study designed in the mold of Catalano and Dooley which seems to support Brenner. Important advance in working with both inpatient and outpatient first admissions.					

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Liem, Ramsay & Paula Rayman "Health and Social Costs of Unemployment," American Psychologist, 77, 10, 1116-1123 for Liem and Liem Work and Unemployment Project	Survey longitudinal	40 white-collar unemployed men and wives, 40 blue-collar unemployed men and wives, 80 control couples matched demographically	9 psychiatric symptom clusters	Unemployed status for male of family	Social causation/ provocation
CONCLUSIONS: Significant association of psychiatric symptoms with job loss for both unemployed individual and later for spouse.					
COMMENTS: Psychiatric symptoms present during unemployment for both partners relieved rapidly leaving no perceptible trace after reemployment.					
Liem, Ramsay & Paula Rayman "Health and Social Costs of Unemployment," American Psychologist, 77, 10, 1116-1123 for Rayman and Bluestone the Hartford Project	Survey longitudinal 206 selected for survey 80 chosen for re-interview		Physical & mental health measures, e.g. hypertension, alcoholism, insomnia	Job loss in the aircraft industry in Hartford, Conn. during preceeding 10 year period	Social causation/ provocation
CONCLUSIONS: Hypertension, insomnia, alcoholism associated with previous job loss.					
COMMENTS: Retrospective type of study does require a self-report which may present methodological problems.					

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Little, Craig B. "Technical-Professional Unemployment: Middle Class Adaptability to Personal Crisis," Sociological Quarterly, 17 Spring 1976 263-273	Cross-Sectional Survey	100 male technical professional workers in Waltham, Mass.	Attitude toward job loss financial status	Unemployed status	Do those with most resources who are younger or do those with higher status and most to lose suffer worse from unemployment.

CONCLUSIONS: 48% positive attitude toward job loss; those with more financial problems suffered more. No negative outcomes reported.

COMMENTS: The study had no controls and was conducted in one wave only, not permitting measurement of those with protracted unemployment. Study done in period of low unemployment locally and with a low national rate of unemployment for these technical-professional job families.

Manuso, James S.J. "Coping with Job Abolishment" Journal of Occupational Medicine, 19, 9, September 1977 598-601	Clinical Study Evaluation of a Stress Mgmt. Program	16 (15 white, 1 black) 91 changers 32 males 59 females	Depression, hypertension, gastrointestinal disorders, anxiety	Job loss and for controls, job change with added responsibility	Life events promote stress which exacerbates preexisting conditions

CONCLUSIONS: For job losers, those with tested predisposition to depression suffered depression. Stress Management Program alleviated depression. Controls exhibited anxiety, hypertension, and gastrointestinal disorders.

COMMENTS: Job loss and job-related stress appear to operate differently.

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Marshall, James R. & Donna P. Funch "Mental Illness and the Economy: A Critique and Partial Replication" JHSB, 20, 1979	Archival Time Series replicates part of, Brenner's study analyzing through different methods	Male and female mental hospital admittees, 1916-55	Admissions to mental hospitals	Index of Manufacturing employment as measurement of the state of the economy Mental hospital capacity	Investigates whether the newer psychosocial explanation by such variance by stress models is actually a better explanation for groups than earlier hypotheses which postulate that periods of economic hardship promote intolerance and subsequent hospitalization of the deviant.

CONCLUSIONS: The reanalysis of the portion used of the admissions data support Brenner's association but suggest that while a stress explanation may be appropriate for the working age population the intolerance argument is not ruled out for persons in dependent status.

COMMENTS: Two major criticisms of Brenner's 1973 study are advanced. The first centers upon analytical procedures and suggests that detrending is not productive. Further, hospital capacity, does influence admissions for all groups.

Pierce, A. "The Economic Cycle and the Social Suicide Rate" American Soc. Review, 32, 1976 pp. 457-62	Archival	White male in U.S. from 1919-40 (age standardized)	Suicide	Index of common stock prices	Advanced the Durkheimian proposition that economic fluctuations, both up and down, reduced social cohesion and led to increased suicide

CONCLUSIONS: A significant positive relationship was found (r = .74) relating absolute economic change to the lagged suicide rate downturns alone, not significantly related.

COMMENTS: A time series design was used lagging the dependent variable one year after absolute change in the economic indicator.

MENTAL AND PHYSICAL ILLNESS

TITLE & AUTHOR CITATION	TYPE	SAMPLE	DEPENDENT VARIABLE(S)	INDEPENDENT VARIABLE(S)	THEORETICAL BASE
Powell, Douglas H. and Paul F. Driscoll "Middle Class Professionals Face Unemployment," Society, 10:2, 1973, pp. 47-51	Case Study	25 men, then 50 picked randomly at Waltham, Mass.	Depressed mood internal change and changed behavior, (self-reported and defined)	Unemployed status	Not stated although social causation and resource insufficiency is clearly emphasized.
CONCLUSIONS: Several phases with marked behavioral and psychic changes were identified as characteristic responses to unemployment.					
COMMENTS: A close study with interesting results and interpretation but non-random sample, no control group, and no firmly specified variables reduce its general applicability.					
Thiel, Hans G., Donald Parker & Bruce Thomas "Stress Factors and the Risk of Myocardial Infarction" Journal of Psychosomatic Research 17, 1973, pp. 43-57	Survey + Clinical Examination	50 post-myocardial infarction (mental illness) males, 50 controls, age 40-60 10 post-mental illness males under 40	Emotional and psychosocial stress factors	Presence/absence of previous mental illness	Stress patterns, life events and life style and habits are significantly associated with cardiac disease
CONCLUSIONS: The clustering of multiple psychosocial stresses and excessive habits, demostrated in the majority of the mental illness study sample, contribute significantly to heart disease.					
COMMENTS: Data taken include blood pressure, weight, height, serum cholesterol, serum triglycerides, 17 habits, life status, marital status. Diabetic condition significantly related to onset of mental illness.					

REFERENCES

Ahlburg, Dennis A., and Morton Owen Schapiro, *Socioeconomic Ramifications of Changing Cohort Size: An Analysis and Forecast of U.S. Postwar Suicide Rates by Age and Sex,* William College, 1982. (Mimeograph)

Alden, John R., Louis A. Ferman and Susan Gore, "The Employment Experience: The Impact of Economic Deprivation and Social Support on Responses to Job Loss." Final Report on Research supported by the Center for Work and Mental Health, National Institute of Mental Health under RO1 MH 26546. n.d. 242 pp.

Allison, John P., "Economic Factors and the Rate of Crime," *Land Economics,* Vol. 2, No. 48, May 1972, pp. 193-196.

Antonovsky, A., "A Social Class and the Major Cardiovascular Diseases," *Journal of Chronic Diseases,* Vol. 21, 1968, pp. 65-106.

Arlook, Ira, "The Impact of Plant Closing Job Loss on Individuals and Families," in Michigan Department of Mental Health, *Response to Major Layoffs and Plant Closings,* Lansing, Michigan, June 1980.

Averill, J.R., "Personal Control over Aversive Stimuli and its Relationship to Stress," *Psychological Bulletin,* Vol. 80, 1973, pp. 286-303.

Avio, K.L., and C.S. Clark, *Property Crime in Canada: An Econometric Study.* Ontario, Canada: Ontario Council of Economic Research Studies, 1976.

Barling, P.W., and P.J. Handel, "Incidence of Utilization of Public Mental Health Facilities as a Function of Short Term Economic Decline," *American Journal of Community Psychology,* Volume 8, 1980, pp. 31-39.

Bartel, Ann P., "Women and Crime: An Economic Analysis," *Economic Inquiry,* Vol. 17, No. 1, January 1979, pp. 29-51.

Becker, Gary S., "Crime and Punishment: An Economic Approach," *Journal of Political Economy,* Vol. 76, No. 2, March/April 1968, pp. 169-217.

Becker, Gary S., and William M. Landes, eds., *Essays in the Economics of Crime and Punishment.* New York: Columbia University Press, 1974.

Berg, Ivar, and Michael Hughes, "Economic Circumstances and the Entangling Web of Pathologies: An Esquisse," in Ferman and Gordus, eds., *Mental Health and the Economy.* Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, December 1979, pp. 15-61.

Block, M.K., and J.M. Heineke, "A Labor Theoretic Analysis of the Criminal Choice," *American Economic Review,* Vol. 65, No. 3, June 1975, pp. 314-325.

Block, M.K., and Robert C. Lind, "Crime and Punishment Reconsidered," *Journal of Legal Studies,* Vol. 4, No. 1, January 1975, pp. 241-247.

Block, M.K., and Robert C. Lind, "An Economic Analysis of Crimes Punishable by Imprisonment," *Journal of Legal Studies,* Vol. 4, June 1975, pp. 479-492.

Bonger, William, *Criminality and Economic Conditions.* Boston, Massachusetts: Little Brown, 1916.

Braginsky, D.D., and B.M. Braginsky, "Surplus People: Their Lost Faith in Self and System," *Psychology Today,* Vol. 9, August 1975, pp. 68-72.

Braithwaite, John, *Inequality, Crime and Public Policy.* London: Routledge and Kegan Paul, 1979.

Breed, Warren, "Occupational Mobility and Suicide Among White Males," *American Sociological Review,* Vol. 28, No. 2, April 1963.

Brenner, M. Harvey, "Estimating the Social Cost of National Economic Policy: Implications for Mental and Physical Health, and Criminal Aggression," Paper No. 5 in Vol. 1: Employment, Achieving the Goals of the Employment Act of 1946, Thirteenth Anniversary Review, Joint Economic Committee, October 1976.

Brenner, M. Harvey. *Mental Illness and the Economy.* Cambridge, Massachusetts: Harvard University Press, 1973.

Brenner, M. Harvey, "Pathology and the National Economy," statement prepared for the Task Force on Economic Disparities, Joint Economic Committee of the U.S. Congress, 1979.

Brenner, M. Harvey, "Patterns of Psychiatric Hospitalization Among Different Socio-Economic Groups in Response to Economic Stress," *Journal of Nervous and Mental Diseases,* Vol. 148, 1969, pp. 31-38.

Brenner, M. Harvey, "Personal Stability and Economic Security," *Social Policy,* Vol. 8, 1977, pp. 2-5.

Brenner, M. Harvey, "Reply to Mr. Eyer," *International Journal of Health Services,* Vol. 8, No. 1, 1976, pp. 149-155.

Brenner, M. Harvey, "Trends in Alcohol Consumption and Associated Illnesses: Some Effects of Economic Changes," *American Journal of Public Health,* Vol. 65, 1975, pp. 1279-1292.

Briar, Katherine, H. *The Effects of Long-Term Unemployment on Workers and Their Families.* San Francisco: R and E Research Associates, Inc., 1978.

Buss, Terry F., and George Cheney, "Mental Health Services Consumption by Laid-off Workers During a Plant Shutdown," presented at the Winter Quarter Meeting of the Ohio Council of Community Mental Health Centers, 1980.

Buss, Terry, and C. Richard Hofstetter, "Communication, Information, and Participation During an Emerging Crisis," *The Social Science Journal,* Vol. 18, No. 1, January 1981, pp. 81-91.

Buss, Terry F., C. Richard Hofstetter, and F. Stevens Redburn, "The Psychology of Mass Unemployment: Some Political and Social Implications," *Political Psychology,* (in press, 1981).

Buss, Terry F., and F. Stevens Redburn, "Evaluating Human Service Delivery During a Plant Shutdown: A Decision Seminar Application," *Journal of Health and Human Resources and Administration,* November 1980, pp. 229-250.

Buss, Terry, F., and F. Stevens Redburn, "How to Shut Down a Plant," *Industrial Management,* (in press, 1981).

Cahalan, Don, and Robin Room, "Problem Drinking Among American Men Aged 21-59," *American Journal of Public Health,* Vol. 62, No. 11, pp. 1473-1482.

Cahill, J., T. Hamer and M. McGurrin, "Economic Change and Community Mental Health Center Utilization in Philadelphia: A Preliminary Report". Philadelphia, Pennsylvania: Glassboro State College, Division of Research and Evaluation, Philadelphia Office of Mental Health and Mental Retardation, 1982. (Mimeograph).

Caplan, R.D., Sidney Cobb, and J.R.P. French, Jr., "Relationships of Cessation of Smoking with Job Stress, Personality, and Social Support," *Journal of Applied Psychology,* Vol. 60, 1975, pp. 211-219.

Cassel, J.C., "Social Science Theory as a Source of Hypotheses in Epidemiological Research," *American Journal of Public Health,* 54, 1964, pp. 1482-1488.

Catalano, Ralph, *Health, Behavior and the Community.* New York: Pergamon Press, 1979.

Catalano, Ralph, and David Dooley, "Does Economic Change Provoke or Uncover Behavioral Disorder? A Preliminary Test," in L.A. Ferman and J.P. Gordus, eds., *Mental Health and the Economy.* Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, December 1979, pp. 321-341.

Catalano, Ralph, and David Dooley, "Economic Predictors of Depressed Mood and Stressful Life Events in a Metropolitan Community," *Journal of Health and Social Behavior,* 18, 1977, pp. 292-307.

Cavan, R.S., "Unemployment: Crisis of the Common Man" *Marriage and Family Living,* Vol. 21, 1959, pp. 139-146.

Cloward, Richard A., and Lloyd E. Ohlin, "Illegitimate Means and Delinquent Subcultures," in M.E. Wolfgang, et al., eds., *The Sociology of Crime and Delinquency.* New York: John Wiley & Sons, 1962, pp. 255-258.

Cobb, Sidney, "A Model for Life Events and Their Consequences," in B.S. Dohrenwend and B.P. Dohrenwend, eds., *Stressful Life Events: Their Nature and Effects.* New York: John Wiley & Sons, 1974.

Cobb, Sidney, "Physiologic Changes in Men Whose Jobs Were Abolished," *Journal of Psychosomatic Research,* Vol. 18, 1974, pp. 245-258.

Cobb, Sidney, "Social Support as a Moderator of Life Stress," *Psychosomatic Medicine,* Vol. 38, No. 5, Sept./Oct. 1976, pp. 300-314.

Cobb, Sidney, and S.V. Kasl, "Termination: The Consequences of Job Loss," (Report No. 76-1261) Cincinnati, Ohio: National Institute for Occupational Safety and Health, Behavioral and Motivational Factors Research, 1977.

Cobb, Sidney, W.J. Schull, E. Harburg, and Stanislav V. Kasl, "The Intrafamilial Transmission of Rheumatoid Arthritis: An Unusual Study," *Journal of Chronic Diseases,* 22, 1969, pp. 193-194.

Cohn, R.M., "The Effect of Employment Status Change on Self Attitudes," *Social Psychology,* 41, 2, 1978, pp. 81-93.

Comstock, G.W., and K.B. Partridge, "Church Attendance and Health," *Journal of Chronic Diseases*, 25, 1972, pp. 665–672.

Croog, Sidney H., "The Family as a Source of Stress," in S. Levine and N. Scotch, eds., *Social Stress*. Chicago: Aldine, 1970.

Danziger, S., and D. Wheeler, "The Economics of Crime: Punishment or Income Redistribution," *Review of Social Economy*, Vol. 33, October 1975, pp. 113–139.

Dohrenwend, B.P., and D.L. Crandell, "Psychiatric Symptoms in Community, Clinic, and Mental Hospital Groups," *American Journal of Psychiatry*, 126, 1970, pp. 1611–1621.

Dohrenwend, Bruce, and B.S. Dohrenwend, *Social Status and Psychological Disorders: A Causal Inquiry*. New York: John Wiley, 1969.

Dooley, David, and Ralph Catalano, "Economic Change as a Cause of Behavioral Disorder," *Psychological Bulletin*, (in press, 1980).

Dooley, David, and Ralph Catalano, "Economic Life, and Disorder Changes: Time-Series Analyses," *American Journal of Community Psychology*, Vol. 7, No. 4, 1979, pp. 381–396.

Dooley, David, and Ralph Catalano, "Money and Mental Disorder: Toward Behavioral Cost Accounting for Primary Prevention," *American Journal of Community Psychology*, Vol. 5, No. 2, 1977, pp. 217–227.

Dooley, D., R. Catalano. R. Jackson, and A. Brownell, "Economic Life and Symptom Changes in a Nonmetropolitan Community," *Journal of Health and Social Behavior*, 22, June 1981, pp. 144–154.

Durkheim, Emile, *Suicide: A Study in Sociology*. Glencoe, Illinois: Free Press, 1951.

Easterlin, Richard A., *Birth and Fortune: The Impact of Numbers on Personal Welfare*. New York: Basic Books, 1980.

Ehrlich, Issac, "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation," *Journal of Political Economy*, 81, May/June 1973, pp. 521–565.

Ehrlich, Issac, "Participation in Illegitimate Activities: An Economic Analysis," in Gary S. Becker and William M. Landes, eds., *Essays in the Economics of Crime and Punishment*. New York: Columbia University Press, 1974.

Eisenberg, Philip, and P.F. Lazarsfeld, "The Psychological Effects of Unemployment," *Psychological Bulletin*, Vol. 35, June 1938, pp. 358–389.

Elder, Glen, and Richard C. Rockwell, "Economic Depression and Postwar Opportunity in Men's Lives: A Study of Life Patterns and Health," in Roberta Simmons ed., *Research in Community and Mental Health*, Vol. 1, JAI Press, 1979, pp. 249–303.

Engel, G. L., "Studies of Ulcerative Colitis III. The Nature of the Psychologic Process," *American Journal of Medicine*, 19, 1955, 231–256.

Eyer, Joseph, "Does Unemployment Cause the Death Rate Peak in Each Business Cycle?" *International Journal of Health Services*, Vol. 7, No. 4, 1977, pp. 625–662.

Eyer, Joseph, "Prosperity as a Cause of Death," *International Journal of Health Services*, 7, 1977, pp. 125–150.

Eyer, Joseph, "Rejoinder to Dr. Brenner," *International Journal of Health Services*, 6:1, 1976, pp. 157–168.

Eyer, Joseph, "Review of Mental Illness and the Economy," *International Journal of Health Services*, 6:1, 1976, pp. 139–147.

Faris, R. E. C., and H. W. Dunham, *Mental Disorders in Urban Areas*. Chicago: University of Chicago Press, 1939.

Ferman, Louis A., and Mary C. Blehar, "Family Adjustment to Unemployment," *Families Today*, Vol. 1, National Institute of Mental Health Science Monograph, G.P.O., Washington, D.C., 1979, pp. 413–438.

Ferman, Louis A., and John Gardner, "Economic Deprivation, Social Mobility, and Mental Health," in L. A. Ferman and J. R. Gordus eds., *Mental Health and the Economy*. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, 1979, pp. 193–224.

Ferman, Louis A., and Jeanne P. Gordus, eds., *Mental Health and the Economy*. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, 1979.

Figueira-McDonough, Josephina, "Mental Health Among Unemployed Detroiters," *Social Service Review*, Vol. 52, No. 3, 1978, pp. 383–399.

Fineman, Stephen, "A Psychological Model of Stress and Its Application to Managerial Unemployment," *Human Relations*, Vol. 32, No. 4, pp. 323–345.

Fleisher, Belton M., *The Economics of Delinquency*. Chicago: Quadrangle Books, 1966b.

Fleisher, Belton M., "The Effect of Income on Delinquency," *American Economic Review*, 56:5, March 1966a, pp. 118–137.

Fleisher, Belton M., "The Effects of Unemployment on Juvenile Delinquency," *Journal of Political Economy*, 71:6, December 1963, pp. 543–555.

Forst, Brian E., "Participation in Illegitimate Activities: Further Empirical Findings," *Policy Analysis*, 2:3, Summer 1976, pp. 477–492.

Fox, James Alan, *Forecasting Crime Data*. Lexington, Massachusetts: Lexington Books, 1978.

Frank, Jeanine, "Economic Change and Mental Health in an Uncontaminated Setting," *American Journal of Community Psychology*, Vol. 9, No. 4, 1981, pp. 395–410.

Gansemer, Duane G., and Lyle Knowles, "The Relationship Between Part I Crime and Economic Indicators," *Journal of Political Science and Administration*, Vol. 2, No. 3, September 1974, pp. 395–398.

Gardner, John Arthur, "Skidding and Bumping: Cyclical Patterns of Quality Adjustment of Labor Input," unpublished dissertation, The University of Michigan, Ann Arbor, Michigan, 1980.

Gibbons, Don C., *The Criminological Enterprise*. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1979.

Gibbs, Jack P., ed., *Suicide*. New York: Harper & Row, 1968.

Gillespie, R. W., "Economic Factors in Crime and Delinquency: A Critical Review of the Empirical Evidence." Final report submitted to the National Institute for Law Enforcement and Criminal Justice, 1975.

Ginzberg, E., "The Job Problem," *Scientific American*, 237, 1977, pp. 43–51.

Glaser, Daniel, and Kent Rice, "Crime, Age and Employment," *Amerian Sociological Review*, Vol. 24, No 5, October 1959, pp. 679–686.

Goodchilds, J. D., and E. E. Smith, "The Effects of Unemployment as Mediated by Social Status," *Sociometry*, 1963, 26, pp. 287–293.

Gordon, David M., "Capitalism, Class and Crime in America," *Crime and Delinquency*, April 1973, pp. 163–185.

Gore, S., "The Effect of Social Support in Moderating the Health Consequences of Unemployment," *Journal of Health and Social Behavior*, June 1978, 19, pp. 157–165.

Greer, S., and T. Morris, "Psychological Attributes of Women Who Develop Breast Cancer: A Controlled Study," *Journal of Psychosomatic Research*, 19, 1975, pp. 147–153.

Gurin, Gerald, Joseph Veroff, and S.C. Feld, *Americans View their Mental Health*. New York: Basic Books, 1960.

Gylys, J.A., "The Causes of Crime and Application of Regional Analysis," *Atlanta Economic Review*, 20:9, September 1970, pp. 34–37.

Harrison, Bennett, "Education and Underemployment in the Urban Ghetto," *American Economic Review*, December 1972, pp.776–812.

Harrison, Bennett, *Education, Training, and the Urban Ghetto*. Baltimore, Maryland: The John Hopkins University Press, 1972.

Harrison, Bennett, "Employment, Unemployment and Structure of the Urban Labor Market," *Urban Quarterly*, Spring, 1972.

Hartley, Jean F., "The Impact of Unemployment on the Self-Esteem of Managers," *Journal of Occupational Psychology*, Vol. 53, 1980, pp. 147–155.

Heise, David, R., *Causal Analysis*. New York: John Wiley & Sons, 1975.

Heller, A., and M.J. Kasoff, "Job Loss and Impact on Health." Paper presented at American Public Health Association Annual Meeting, Detroit, Michigan, October 20, 1980.

Heller, Kenneth, "The Effects of Social Support: Prevention and Treatment Implications." To appear in A.P. Goldstein and F.H. Kanfer, eds., *Maximizing Treatment Gains: Transfer Enhancement in Psychotherapy*. New York: Academic Press, in press.

Hemleg, David D. and Lee. R. McPheters, "Crime as an Externality of Regional Economic Growth," *Review of Regional Studies*, 4, 1974, pp. 73–84.

Henry, A.F., and J.F. Short, Jr., *Suicide and Homicide*. Glencoe, Illinois: Free Press, 1954.

Hepworth, Sue J., "Moderating Factors of the Psychological Impact of Unemployment," *Journal of Occupational Psychology*, Vol. 53, 1980, pp. 139–145.

Hinkle, L.E., "The Effect of Exposure to Culture Change, Social Change and Changes in Interpersonal Relationships on Health," in B.S. Dohrenwend and B. P. Dohrenwend, eds., *Stressful Life Events*. New York: Wiley, 1974.

Hoch, Irving, "Factors in Urban Crime," *Journal of Urban Economics*, 1:2, April 1974, pp. 184–229.

Horan, P.M., and B.H. Gray, "Status Inconsistency, Mobility and Coronary Heart Disease," *Journal of Health and Social Behavior*, 15, 1974, pp. 300–310.

House, James, "The Effects of Occupational Stress on Physical Health," in James O'Toole ed., *Work and the Quality of Life*, Chp. 7: pp. 145–160, Cambridge, Massachusetts: MIT Press, 1974.

House, James S.. *Work Stress and Social Support*, Reading, Massachusetts: Addison-Wesley Publishing Co., 1981.

Hyman, Herbert, "The Effects of Unemployment: A Neglected Problem in Social Research," in R.K. Merton, J.S. Coleman, and P.H. Rossi eds., *Qualitative and Quantitative Social Research*. New York: Free Press, 1980, pp. 240–264.

Imboden, J.B., A. Canter, and L. Cluff, "Separation Experiences and Health Records in a Group of Normal Adults," *Phychosomatic Medicine*, 35, 1963, pp. 433–441.

Jacobs, M.A., A.Z. Spilken, M.M. Norman, and L.S. Anderson, "Life Stress and Respiratory Illness," *Psychosomatic Medicine*, 32, 1970, pp. 233–243.

Jahoda, Marie, "The Impact of Unemployment in the 1930's and the 1970's," *Bulletin of the British Psychological Society*, Vol. 32, August 1979, pp. 309–314.

Jahoda, M., P.F. Lazarsfeld, and H. Zeisel, *Marienthal: The Sociography of an Unemployed Community*. Chicago: Aldine-Atherton, 1971.

Jenkins, C.D., "Psychologic and Social Precursors of Coronary Disease," *New England Journal of Medicine*, 284, 1971, pp. 244–255, 307–317.

Jenkins, C.D., "Recent Evidence Supporting Psychologic and Social Risk Factors for Coronary Disease," *New England Journal of Medicine*, 294, 1976, pp. 987–995, 1033–1039.

Kaplan, B.H., J.L. Cassel, and S. Gore, "Social Support and Health," *Medical Care 15 Supplement*, pp. 47–58, 1977.

Kaplan, Roy H., and Kurt Tausky, "The Meaning of Work among the Hard-Core Unemployed," *Pacific Sociological Review*, 17, 2, April 1974, pp. 185–198.

Kasl, Stanislav V., "Work and Mental Health," in James O'Toole ed., *Work and the Quality of Life*. Cambridge, Massachusetts: MIT Press, 1974, pp. 171–196.

Kasl, Stanislav V., and Sidney Cobb, "Blood Pressure Changes in Men Undergoing Job Loss: A Preliminary Report," *Psychosomatic Medicine*, 32, 1970, pp. 19–38.

Kasl, Stanislav V., Susan Gore, and Sidney Cobb, "The Experience of Losing a Job: Reported Changes in Health, Symptoms, and Illness Behavior," *Psychosomatic Medicine*, Vol. 37, No. 2, March/April 1975, pp. 106–122.

Klein, D. C., E. Fencil-Morse, and M. E. P. Seligman, "Learned Helplessness, Depression, and the Attribution of Failure," *Journal of Personality and Social Psychology*, 33, 1976, pp. 508–516.

Land, K. C., and M. Felson, "A General Framework for Building Dynamic Macro Social Indicator Models: Including an Analysis of Changes in Crime Rates and Police Expenditures," *American Journal of Sociology*, Vol. 82, No, 3, November 1976, pp. 565–604.

Landau, Stephen G., David L. Neal, Marc Meisner, and Joan Prudic, "Depressive Symptomatology among Laid-Off Workers," *Journal of Psychiatric Treatment and Evaluation*, Vol. 2, 1980, pp. 5–12.

Langner, T. S., "A Twenty-Two Item Screening Score of Psychiatric Symptoms Indicating Impairment," *Journal of Health and Human Behavior*, 3, 1962, pp. 269–276.

Le Shan, L. L., and R. E. Worthington, "Loss of Cathexes as a Common Psycho-Dynamic Characteristic of Cancer Patients: An Attempt at Statistical Validation of a Clinical Hypothesis," *Psychological Reports*, 2, 1956, pp. 183–193.

Le Shan, L. L., and R. E. Worthington, "Some Recurrent Life History Patterns Observed in Patients with Malignant Disease," *Journal of Nervous and Mental Disorders*, 124, 1956, pp. 460–465.

Levin, K. K., "Role of Depression in the Production of Illness in Pernicious Anaemia," *Psychosomatic Medicine*, 21, 1959, pp. 23–27.

Liem, Ramsay, and Joan H. Liem, "Social Support and Stress: Some General Issues and Their Application to the Problem of Unemployment," in Ferman and Gordus, eds., *Mental Health and the Economy*. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, 1979, pp. 347–396.

Liem, Ramsay, and Paula Rayman, "Health and Social Costs of Unemployment," *American Psychologist*, 77, 10, pp. 1116–1123, 1982.

Lindemann, E. (1950), cited in G. L. Engel, "Studies of Ulcerative Colitis III. The Nature of the Psychologic Process," *American Journal of Medicine*, 19, 1955, pp. 231–256.

Little, Craig B., "Technical-Professional Unemployment: Middle Class Adaptability to Personal Crisis," *Sociological Quarterly*, 17, Spring 1976, pp. 262–274.

Litz, T., "Emotional Factors in the Etiology of Hyperthyroidism," *Psychosomatic Medicine*, 11, 1949, pp. 2–8.

Liu, Yih-Wu, and Richard H. Bee, *A Statistical Analysis of Socio-Economic Implications of Plant Closings on the Crime Index.* Youngstown State University, 1981. (Mimeograph)

Lombard, H. L., and E. Potter, "Epidemiological Aspects of Cancer of the Cervix," *Cancer,* 3, 1950, pp. 960–969.

Long, Sharon K., and Ann D. Witte, "Current Economic Trends: Implications for Crime and Criminal Justice," in Kevin N. Wright, ed., *Crime and Criminal Justice in a Declining Economy.* Cambridge, Massachusetts: Oelgeschlager, Gunn & Hain Publishers Inc., 1981, pp. 69–143.

Maddison, D. and A. Viola, "The Health of Widows in the Year Following Bereavement," *Journal of Psychosomatic Research,* 12, 1968, pp. 297–306.

Manuso, James S. J., "Coping with Job Abolishment," *Journal of Occupational Medicine,* 19:9, September 1977, pp. 598–601.

Markush, R., and R. Favero, "Epidemiological Assessment of Stressful Life Events, Depressed Mood, and Physiological Symptoms—A Preliminary Report," in B. S. Dohrenwend and B. P. Dohrenwend, eds., *Stressful Life Events.* New York: Wiley & Sons, 1974, pp. 171–190.

Marshall, J. P., and D. P. Funch, "Mental Illness and the Economy: A Critique and Partial Replication," *Journal of Health and Social Behavior,* 20, 1979, pp. 282–289.

Mathieson, D., and P. Passell, "Homicide and Robbery in New York City: An Economic Model," *Journal of Legal Studies,* 6, June 1976, pp. 83–98.

McClary, A. R., Meyer, E. and E. L. Weitzman, "Observations on the Role of the Mechanism of Depression in Some Patients With Disseminated Lupus Erythematosus," *Psychosomatic Medicine,* 17, 1955, pp. 311–321.

McPheters, Lee R., and William B. Stronge, eds., *the Economics of Crime and Law Enforcement.* Springfield, Illinois: Charles C. Thomas, 1976.

Mechanic, D., "Illness Behavior, Social Adaptation, and the Management of Illness," *Journal of Nervous and Mental Disease,* 165, 1977, pp. 79–87.

Mechanic, D., and J. R. Greenley, "The Prevalence of Psychological Distress and Help-Seeking in a College Student Population," *Social Psychiatry,* 11, 1976, pp. 1–14.

Medalie, J. H., M. Snyder, J. J. Groen, H. N. Neufeld, U. Goldbourt, and E. Riss, "Angina Pectoris among 10,000 Men: 5-year Incidence and Unvariate Analysis," *American Journal of Medicine,* 55, 1973, pp. 583–594.

Miller, S. M., "The Political Economy of Social Problems: From the Sixties to the Seventies," *Social Problems,* 24, 1976, pp. 131–141.

Millet, J. A. P., Lief, H. and B. Mittelmann, "Raynaud's Disease. Psychogenic Factors and Psychotherapy," *Psychosomatic Medicine,* 15, 1953, pp. 61–65.

Moen, Phyllis, "Family Impacts of the 1975 Recession: Duration of Unemployment," *Journal of Marriage and the Family,* Vol. 41, No. 3, August 1979, pp. 561–572.

Moen Phyllis, "Measuring Unemployment: Family Considerations," *Human Relations,* Vol. 33, No. 3, 1980, pp. 183–192.

Morris, Douglas, and Luther Tweeten, "The Costs of Controlling Crime: A Study in the Economics of City Life," *Annals of Regional Science,* 5:1, June 1971, pp. 33–50.

Moss, G. E., *Illness, Immunity and Social Interaction.* New York: Wiley, 1973.

Muslin, H. L., and W. Peiper, "Separation Experience and Cancer of the Breast," *Psychosomatics,* 3, 1962, pp. 230–236.

Muslin, H. L., Gyarfas, K. and W. J. Peiper, "Separation Experience and Cancer of the Breast, "*Annals of the New York Academy of Sciences,* 125(3), 1966, pp. 802–806.

Mutter, A. Z. and M. J. Schleifer, "The Role of Psychological and Social Factors in the Onset of Somatic Illness in Children, "*Psychosomatic Medicine,* 33, 1966, pp. 333–343.

Myers, J. K., Lindenthal, J. J., and M. P. Pepper, "Life Events and Psychiatric Impairment." *Journal of Nervous and Mental Disorders,* 152, 1971, pp. 149–157.

Myers, J. K., Lindenthal, J. J., and M. P. Pepper, "Life Events, Social Integration and Psychiatric Symptomatology," *Journal of Health and Social Behavior,* 14, 1975, pp. 121–127.

Parnes, H. S., and R. King, "Middle Aged Job Losers," *Industrial Gerontology,* 4, 1977, pp. 77–95.

Parnes, M. D., McConville, B. J. and S. M. Kaplan, "The Prediction of Frequency of Illness from the Response to Separation," *Psychosomatic Medicine,* 28, 1966, pp. 162–171.

Pearlin, L. I., and C. W. Radabaugh, "Economic Strains and the Coping Functions of Alcohol," *American Journal of Sociology,* 82, 1976, pp. 652–663.

Peterson Mark A., Braiker, Harriet B., and Suzanne M. Polich, *Doing Crime: A Survey of California Prison Inmates.* Santa Monica, California: The Rand Corporation, 1980.

Phillips, L. H., and H. L. Votey, Jr., "An Economic Analysis of the Deterrent Effect of Law Enforcement of Criminal Activity," *Journal of Criminal Law, Criminology and Police Science,* 63:3, September 1972, pp. 330–342.

Phillips, L. H., H. L. Votey, Jr., and D. Maxwell, "Crime, Youth and the Labor Market," *Journal of Political Economy,* 80, May-June, Part I, 1972, pp. 491–504.

Philippopolous, G. S., Wittkower, E. D. and A Cousineau, "The Etiologic Significance of Emotional Factors in Onset and Exacerbation of Multiple Sclerosis," *Psychosomatic Medicine,* 20, 1958, pp. 458–474.

Pierce, Albert, "The Economic Cycle and the Social Suicide Rate," *American Sociological Review,* 32, 1967, pp. 457–462.

Pogue, Thomas F., "Effects of Police Expenditures on Crime Rates: Some Evidence," *Public Finance Quarterly,* 3:1, January 1975, pp. 14–44.

Pope, Hallowell, "Economic Deprivation and Social Participation in a Group of 'Middle Class' Factory Workers," *Social Problems,* 11, Winter 1964, pp. 290–300.

Powell, Douglas H. and Patrick Joseph Driscoll, "Middle Class Professional Face Unemployment," *Society,* 10, 1973, pp. 18–26.

Pressman, Israel, and Arthur Carol, "Crime as a Diseconomy of Scale," in McPheters, Lee R., and William B. Stronge, eds., *The Economics of Crime and Law Enforcement.* Springfield, Illinois: Charles C. Thomas, 1976.

Quinney, Richard, "Structural Characteristics, Population, Areas, and Crime Rates in the United States," *Journal of Criminal Law, Criminology and Police Science,* Vol. 57, No. 1, March 1966, pp. 45–52.

Radzinowicz, Leon, and Marvin E. Wolfgang, eds., *Crime and Justice: Volume I, The Criminal in Society.* New York: Basic Books, 1971.

Radzinowicz, Leon, "Economic Pressures," in L. Radzinowicz and M.E. Wolfgang, eds., *Crime and Justice: Volume I, The Criminal in Society.* New York: Basic Books, 1971, pp. 420–442.

Reiman, Jeffrey H., and Sue Headlee, "Crime and Crisis," in Kevin N. Wright, ed., *Crime and Criminal Justice in a Declining Economy.* Cambridge, Massachusetts: Oelgeschlager, Gunn & Hain, 1981, pp. 27–37.

Ryscavage, Paul M., "Impact of Higher Unemployment on Major Labor Force Groups," *Monthly Labor Review,* 93, March 1970, pp. 21–25.

Schapiro, Morton Owen, and Dennis A. Ahlburg, "Suicide: The Ultimate Cost of Unemployment," *Journal of Post Keynesian Economics.* (Forthcoming)

Schlozman, Kay Leham, and Sidney Verba, *Injury to Insult: Unemployment, Class and Political Response.* Cambridge, Massachusetts: Harvard University Press, 1979.

Sclar, Elliot D., "Community Economic Structure and Individual Well-Being: A Look Behind the Statistics," *International Journal of Health Services,* 10:4, 1980, pp. 563–579.

Sclar, Elliot D., and V. Hoffman, "Planning Mental Health Service for a Declining Economy," (Final Report). Waltham, Massachusetts: Brandeis University, Florence Heller Graduate School of Advanced Studies in Social Welfare, 1978.

Sclar, Elliot D., and P. Messeri, "Estimating the Long-Term Impact of Economic Stagnation Upon the Mental Health of a Local Community." Paper presented at the Annual Meeting of the American Sociological Association, August 1981, pp. 24–28.

Sclar, Elliot D., Stathopolous, P., and H. Strelnick, "Mental Health is Hard Work," *Health/PAC Bulletin,* 12:3, January/February, 1981, pp. 9–31.

Segall, A., "The Sick Role Concept: Understanding Illness Behavior," *Journal of Health and Social Behavior,* 17, 1976, pp. 163–170.

Seiler, L.H., "The 22-Item Scale Used in Field Studies of Mental Illness: A Question of Method, A Question of Substance, and A Question of Theory," *Journal of Health and Social Behavior,* 14, 1973, pp. 252–264.

Sellin, Thorsten, *Research Memorandum on Crime in the Depression.* New York: Arno Press, 1972.

Selye, Hans, *The Stress of Life.* New York: McGraw Hill, 1956.

Shaw, C.R., and H.D. McKay, "An Ecological Analysis of Chicago" and "Theoretical Implications of the Ecological Analysis of Chicago" in M.E. Wolfgang, et al., eds., *The Sociology of Crime and Delinquency.* New York: John Wiley & Sons, 1962, pp. 180–184, 230–235.

Shaw, C.R., and H.D. McKay, "Social Disorganization," in L. Radzinowicz and M.E. Wolfgang, eds., *Crime and Justice: Volume I, The Criminal in Society.* New York: Basic Books, 1971, pp. 406–419.

Shekelle, R.B., Ostfeld, A.M. and O. Paul, "Social Status and Incidence of Coronary Heart Disease," *Journal of Chronic Diseases,* 22, 1969, pp. 381–394.

Sheldon, A. and D. Hooper, "An Enquiry into Health and Ill-Health and Adjustment in Early Marriage," *Journal of Psychosomatic Research,* 13, 1969, pp. 95–101.

Singell, L.D., "Examination of the Empirical Relationships Between Unemployment and Juvenile Delinquency," *American Journal of Economics and Sociology,* 26:4, October 1967, pp. 377–386.

Sjoquist, D. L., "Property Crime and Economic Behavior: Some Empirical Results," *American Economic Review,* 63:3, June 1973, pp. 439–446.

Smart, Reginald G., "Drinking Problems Among Employed, Unemployed, and Shift Workers," *Journal of Occupational Medicine,* Vol. 21, No. 11, Nov. 1979, pp. 731–736.

Smith, T., "A Review of Empirical Findings," in S. L. Syne and L. G. Reeder, eds., "Social Stress and Cardiovascular Disease," *Milbank Memorial Fund Quarterly,* 45, 1967.

Solomon, G. F., "Psychophysiological Aspects of Rheumatoid Arthritis and Auto-Immune Disease," in O. W. Hill, ed., *Modern Trends in Psychomatic Medicine—2.* London: Butterworths, 1970.

Srole, L., Langner, T. S., Michael, S. T., Opler, M. K., and T. A. Rennie, *Mental Health in the Metropolis.* New York: McGraw-Hill, 1962.

Stocks, Anthony, and Terry F. Buss, "The Socio-Economic Consequences of a Plant Shutdown: A Time Series Analysis," Proceedings of the Third International Time Series Conference, North Holland, 1981.

Strange, Walter, "Job Loss: A Psychosocial Study of Worker Reactions to a Plant-Closing in a Company Town in Southern Appalachia," unpublished Ph.D. dissertation, Cornell University, Ithaca, New York, 1977.

Sviridoff, M., and J. W. Thompson, "Linkages Between Employment and Crime: A Qualitative Study of Rikers Releases," Working Paper, Vera Institute of Justice, 1979.

Swimmer, Eugene, "Measurement of the Effectiveness of Urban Law Enforcement: A Simultaneous Approach," *Southern Economic Journal,* 40:4, April 1974, pp. 618–630.

Swimmer, Eugene, "The Relationship of Police and Crime," *Criminology,* 12:3, November 1974, pp. 293–314.

Thaler, Richard, "An Econometric Analysis of Property Crime: Interaction Between Police and Criminals," *Journal of Public Economics,* 8, August 1977, pp. 37–51.

Theil, H. G., Parker, D. and T. A. Bruce, "Stress Factors and the Risk of Myocardial Infarction," *Journal of Psychosomatic Research,* 17, 1973, pp. 43–57.

Thomas, L. Eugene, Esther McCabe, and Jane E. Barry, "Unemployment and Family Stress: A Reassessment," *Family Relations,* Vol. 29, No. 4, Oct. 1980, pp. 517–524.

Thomas, Dorothy Swaine, *Social Aspects of the Business Cycle.* New York: Alfred A. Knopf, 1927.

Thompson, James W., Sviridoff, Michelle and Jerome E. McElroy, "Employment and Crime: A Review of Theories and Research." National Institute of Justice, U.S. Department of Justice, October 1981, U.S. Government Printing Office.

Thurlow H. J., "General Susceptibility to Illness: A Selective Review," *Canadian Medical Association Journal,* 97, 1967, pp. 1397–1404.

Totman, Richard, *Social Causes of Illness.* New York: Pantheon, 1979.

Vold, George B., *Theoretical Criminology.* New York: Oxford University Press, 1979.

Wechsler, H., and T. F. Pugh, "Fit of Individual and Community Characteristics and Rates of Psychiatric Hospitalization," *American Journal of Sociology,* 73, 1967, pp. 331–338.

Weicher, John C., "The Effect of Income on Delinquency: Comment," *American Economic Review,* 60:1, March 1970, pp. 249–256.

Weller, D. C., Block, M. K., and F. C. Nold, "Unemployment and the Allocation of Time by Criminals," Technical Report CERDCR-3-78, Center for Econometric Studies of Crime and the Criminal Justice System, Hoover Institution, Stanford University, 1978.

Witte, Ann Dryden, "Estimating the Economic Model of Crime with Individual Data," *Quarterly Journal of Economics,* 94, February 180, pp. 57–84.

Witte, Ann Dryden, "Employment and Crime: Insights from Research on Individuals," statement prepared for the Joint Economic Committee of the U.S. Congress, October 31, 1979. U.S. Government Printing Office.

Wolfgang, M. E., Savitz and N. Johnston, eds., *The Sociology of Crime and Delinquency.* New York: John Wiley & Sons, 1962.

Wright, Kevin N., ed., *Crime and Criminal Justice in a Declining Economy.* Cambridge, Massachusetts: Oelgeschlager, Gunn & Hain, 1981.

○